**Recycled H2 @TPL1 Properties Table 3.0.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 95.522 C |
| Pressure | 298.537 kPa |
| Molar Flow | 168.026 kgmole/h |
| Mass Flow | 2313.682 kg/h |
| Liquid Volume Flow | 7.749 m3/h |
| Heat Flow | -15699995.079 kJ/h |

**Recycled H2 @TPL1 Components Table 3.0.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0012 |
| n-Butane | 0.0339 |
| H2S | 0.0829 |
| Hydrogen | 0.5548 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0688 |
| H2O | 0.2584 |

**Mixed H2 @TPL1 Properties Table 3.1.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 95.342 C |
| Pressure | 298.537 kPa |
| Molar Flow | 1274.537 kgmole/h |
| Mass Flow | 4544.332 kg/h |
| Liquid Volume Flow | 37.231 m3/h |
| Heat Flow | -13469628.702 kJ/h |

**Mixed H2 @TPL1 Components Table 3.1.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0002 |
| n-Butane | 0.0045 |
| H2S | 0.0109 |
| Hydrogen | 0.9413 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0091 |
| H2O | 0.034 |

**Compressed H2 @TPL1 Properties Table 3.2.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 534.549 C |
| Pressure | 3039.75 kPa |
| Molar Flow | 1274.537 kgmole/h |
| Mass Flow | 4544.332 kg/h |
| Liquid Volume Flow | 37.231 m3/h |
| Heat Flow | 3580610.528 kJ/h |

**Compressed H2 @TPL1 Components Table 3.2.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0002 |
| n-Butane | 0.0045 |
| H2S | 0.0109 |
| Hydrogen | 0.9413 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0091 |
| H2O | 0.034 |

**Crude Feed @TPL1 Properties Table 3.3.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.0 |
| Temperature | 37.78 C |
| Pressure | 113.737 kPa |
| Molar Flow | 1500.0 kgmole/h |
| Mass Flow | 591598.105 kg/h |
| Liquid Volume Flow | 727.549 m3/h |
| Heat Flow | -1096521299.451 kJ/h |

**Crude Feed @TPL1 Components Table 3.3.1**

|  |  |
| --- | --- |
| n-C30 | 0.9245 |
| n-C20 | 0.0 |
| n-Decane | 0.0 |
| n-Butane | 0.0 |
| H2S | 0.0 |
| Hydrogen | 0.0 |
| Thiophene | 0.0246 |
| DEAmine | 0.0 |
| CO2 | 0.0201 |
| H2O | 0.0308 |

**Pumped Crued @TPL1 Properties Table 3.4.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.0 |
| Temperature | 38.06 C |
| Pressure | 3039.75 kPa |
| Molar Flow | 1500.0 kgmole/h |
| Mass Flow | 591598.105 kg/h |
| Liquid Volume Flow | 727.549 m3/h |
| Heat Flow | -1093623293.151 kJ/h |

**Pumped Crued @TPL1 Components Table 3.4.1**

|  |  |
| --- | --- |
| n-C30 | 0.9245 |
| n-C20 | 0.0 |
| n-Decane | 0.0 |
| n-Butane | 0.0 |
| H2S | 0.0 |
| Hydrogen | 0.0 |
| Thiophene | 0.0246 |
| DEAmine | 0.0 |
| CO2 | 0.0201 |
| H2O | 0.0308 |

**Feed Mixture @TPL1 Properties Table 3.5.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.438 |
| Temperature | 53.455 C |
| Pressure | 3039.75 kPa |
| Molar Flow | 2774.537 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.78 m3/h |
| Heat Flow | -1090042682.623 kJ/h |

**Feed Mixture @TPL1 Components Table 3.5.1**

|  |  |
| --- | --- |
| n-C30 | 0.4998 |
| n-C20 | 0.0 |
| n-Decane | 0.0001 |
| n-Butane | 0.0021 |
| H2S | 0.005 |
| Hydrogen | 0.4324 |
| Thiophene | 0.0133 |
| DEAmine | 0.0 |
| CO2 | 0.015 |
| H2O | 0.0323 |

**Hot Reactor Products @TPL1 Properties Table 3.6.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.471 |
| Temperature | 335.367 C |
| Pressure | 365.0 kPa |
| Molar Flow | 2674.969 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.907 m3/h |
| Heat Flow | -666648081.518 kJ/h |

**Hot Reactor Products @TPL1 Components Table 3.6.1**

|  |  |
| --- | --- |
| n-C30 | 0.1555 |
| n-C20 | 0.3629 |
| n-Decane | 0.363 |
| n-Butane | 0.0145 |
| H2S | 0.0176 |
| Hydrogen | 0.036 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0156 |
| H2O | 0.0335 |

**Product to Pump @TPL1 Properties Table 3.7.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.0 |
| Temperature | 70.0 C |
| Pressure | 350.0 kPa |
| Molar Flow | 2513.457 kgmole/h |
| Mass Flow | 593411.05 kg/h |
| Liquid Volume Flow | 758.973 m3/h |
| Heat Flow | -1130138181.378 kJ/h |

**Product to Pump @TPL1 Components Table 3.7.1**

|  |  |
| --- | --- |
| n-C30 | 0.1655 |
| n-C20 | 0.3862 |
| n-Decane | 0.3861 |
| n-Butane | 0.0132 |
| H2S | 0.0101 |
| Hydrogen | 0.0012 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0065 |
| H2O | 0.0298 |

**R-L @TPL1 Properties Table 3.8.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.0 |
| Temperature | 350.0 C |
| Pressure | 3034.75 kPa |
| Molar Flow | 2642.729 kgmole/h |
| Mass Flow | 594141.141 kg/h |
| Liquid Volume Flow | 761.992 m3/h |
| Heat Flow | -662635695.906 kJ/h |

**R-L @TPL1 Components Table 3.8.1**

|  |  |
| --- | --- |
| n-C30 | 0.1574 |
| n-C20 | 0.3669 |
| n-Decane | 0.3641 |
| n-Butane | 0.0142 |
| H2S | 0.0169 |
| Hydrogen | 0.0327 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0148 |
| H2O | 0.0316 |

**R-V @TPL1 Properties Table 3.9.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 350.0 C |
| Pressure | 3034.75 kPa |
| Molar Flow | 32.24 kgmole/h |
| Mass Flow | 2001.296 kg/h |
| Liquid Volume Flow | 2.915 m3/h |
| Heat Flow | -4012385.612 kJ/h |

**R-V @TPL1 Components Table 3.9.1**

|  |  |
| --- | --- |
| n-C30 | 0.002 |
| n-C20 | 0.036 |
| n-Decane | 0.2698 |
| n-Butane | 0.0418 |
| H2S | 0.0722 |
| Hydrogen | 0.3082 |
| Thiophene | 0.0022 |
| DEAmine | 0.0 |
| CO2 | 0.0834 |
| H2O | 0.1844 |

**Reactor Products @TPL1 Properties Table 3.10.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.012 |
| Temperature | 349.999 C |
| Pressure | 3029.75 kPa |
| Molar Flow | 2674.969 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.907 m3/h |
| Heat Flow | -666648081.518 kJ/h |

**Reactor Products @TPL1 Components Table 3.10.1**

|  |  |
| --- | --- |
| n-C30 | 0.1555 |
| n-C20 | 0.3629 |
| n-Decane | 0.363 |
| n-Butane | 0.0145 |
| H2S | 0.0176 |
| Hydrogen | 0.036 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0156 |
| H2O | 0.0335 |

**H2 @TPL1 Properties Table 3.11.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 95.522 C |
| Pressure | 298.537 kPa |
| Molar Flow | 1106.511 kgmole/h |
| Mass Flow | 2230.726 kg/h |
| Liquid Volume Flow | 31.932 m3/h |
| Heat Flow | 2230366.377 kJ/h |

**H2 @TPL1 Components Table 3.11.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0 |
| n-Butane | 0.0 |
| H2S | 0.0 |
| Hydrogen | 1.0 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0 |
| H2O | 0.0 |

**Cold Reactor Products @TPL1 Properties Table 3.12.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.06 |
| Temperature | 70.0 C |
| Pressure | 350.0 kPa |
| Molar Flow | 2674.969 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.907 m3/h |
| Heat Flow | -1144790674.923 kJ/h |

**Cold Reactor Products @TPL1 Components Table 3.12.1**

|  |  |
| --- | --- |
| n-C30 | 0.1555 |
| n-C20 | 0.3629 |
| n-Decane | 0.363 |
| n-Butane | 0.0145 |
| H2S | 0.0176 |
| Hydrogen | 0.036 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0156 |
| H2O | 0.0335 |

**H2 Recycled + @TPL1 Properties Table 3.13.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 95.262 C |
| Pressure | 298.537 kPa |
| Molar Flow | 168.026 kgmole/h |
| Mass Flow | 2313.606 kg/h |
| Liquid Volume Flow | 5.299 m3/h |
| Heat Flow | -15699995.079 kJ/h |

**H2 Recycled + @TPL1 Components Table 3.13.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0012 |
| n-Butane | 0.0339 |
| H2S | 0.0829 |
| Hydrogen | 0.5548 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0688 |
| H2O | 0.2584 |

**Preheated Reactor Feed @TPL1 Properties Table 3.14.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.461 |
| Temperature | 210.0 C |
| Pressure | 3034.75 kPa |
| Molar Flow | 2774.537 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.78 m3/h |
| Heat Flow | -847755738.962 kJ/h |

**Preheated Reactor Feed @TPL1 Components Table 3.14.1**

|  |  |
| --- | --- |
| n-C30 | 0.4998 |
| n-C20 | 0.0 |
| n-Decane | 0.0001 |
| n-Butane | 0.0021 |
| H2S | 0.005 |
| Hydrogen | 0.4324 |
| Thiophene | 0.0133 |
| DEAmine | 0.0 |
| CO2 | 0.015 |
| H2O | 0.0323 |

**Precoled Reactor Products @TPL1 Properties Table 3.15.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.152 |
| Temperature | 218.488 C |
| Pressure | 360.0 kPa |
| Molar Flow | 2674.969 kgmole/h |
| Mass Flow | 596142.436 kg/h |
| Liquid Volume Flow | 764.907 m3/h |
| Heat Flow | -908935025.18 kJ/h |

**Precoled Reactor Products @TPL1 Components Table 3.15.1**

|  |  |
| --- | --- |
| n-C30 | 0.1555 |
| n-C20 | 0.3629 |
| n-Decane | 0.363 |
| n-Butane | 0.0145 |
| H2S | 0.0176 |
| Hydrogen | 0.036 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0156 |
| H2O | 0.0335 |

**R-L- @TPL1 Properties Table 3.16.1**

|  |  |
| --- | --- |
| Vapour Fraction | 0.0 |
| Temperature | 349.999 C |
| Pressure | 3029.75 kPa |
| Molar Flow | 2642.729 kgmole/h |
| Mass Flow | 594141.141 kg/h |
| Liquid Volume Flow | 761.992 m3/h |
| Heat Flow | -662635695.906 kJ/h |

**R-L- @TPL1 Components Table 3.16.1**

|  |  |
| --- | --- |
| n-C30 | 0.1574 |
| n-C20 | 0.3669 |
| n-Decane | 0.3641 |
| n-Butane | 0.0142 |
| H2S | 0.0169 |
| Hydrogen | 0.0327 |
| Thiophene | 0.0014 |
| DEAmine | 0.0 |
| CO2 | 0.0148 |
| H2O | 0.0316 |

**R-V- @TPL1 Properties Table 3.17.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 349.985 C |
| Pressure | 3029.75 kPa |
| Molar Flow | 32.24 kgmole/h |
| Mass Flow | 2001.296 kg/h |
| Liquid Volume Flow | 2.915 m3/h |
| Heat Flow | -4012385.612 kJ/h |

**R-V- @TPL1 Components Table 3.17.1**

|  |  |
| --- | --- |
| n-C30 | 0.002 |
| n-C20 | 0.036 |
| n-Decane | 0.2698 |
| n-Butane | 0.0418 |
| H2S | 0.0722 |
| Hydrogen | 0.3082 |
| Thiophene | 0.0022 |
| DEAmine | 0.0 |
| CO2 | 0.0834 |
| H2O | 0.1844 |

**Hydrogen To Recycle @TPL1 Properties Table 3.18.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 70.0 C |
| Pressure | 350.0 kPa |
| Molar Flow | 161.512 kgmole/h |
| Mass Flow | 2731.386 kg/h |
| Liquid Volume Flow | 5.934 m3/h |
| Heat Flow | -14652493.544 kJ/h |

**Hydrogen To Recycle @TPL1 Components Table 3.18.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0034 |
| n-Butane | 0.0352 |
| H2S | 0.1343 |
| Hydrogen | 0.577 |
| Thiophene | 0.0005 |
| DEAmine | 0.0 |
| CO2 | 0.1577 |
| H2O | 0.0919 |

**Sweet H2 @TPL1 Properties Table 3.19.1**

|  |  |
| --- | --- |
| Vapour Fraction | 1.0 |
| Temperature | 95.521 C |
| Pressure | 298.537 kPa |
| Molar Flow | 167.79 kgmole/h |
| Mass Flow | 2305.922 kg/h |
| Liquid Volume Flow | 7.738 m3/h |
| Heat Flow | -15624663.432 kJ/h |

**Sweet H2 @TPL1 Components Table 3.19.1**

|  |  |
| --- | --- |
| n-C30 | 0.0 |
| n-C20 | 0.0 |
| n-Decane | 0.0012 |
| n-Butane | 0.0339 |
| H2S | 0.0831 |
| Hydrogen | 0.5554 |
| Thiophene | 0.0 |
| DEAmine | 0.0 |
| CO2 | 0.0679 |
| H2O | 0.2585 |