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Cooldown

Results

Cumulative Length (m)	Overall Heat Transfer Coefficient (kJ/h-m2-C)	Inside Film Coefficient (kJ/h-m2-C)	Fluid Thermal Conductivity (W/m-K)	First Intermediate Temperature (C)	Second Intermediate Temperature (C)	Third Intermediate Temperature (C)	Temperature for Max Time Since Shutdown (C)	Time to Reach Min Cooldown Temperature (hours)

Inlet Properties : inlet

	Overall	Vapour Phase			
Vapour/Phase Fraction	1.0000	1.0000			
Temperature: (C)	45.00 *	45.00			
Pressure: (kPa)	8000.00 *	8000.00			
Molar Flow (kgmole/h)	300.00 *	300.00			
Mass Flow (kg/h)	5512.61	5512.61			
Liquid Volume Flow (m3/h)	16.82	16.82			
Std Gas Flow (STD_m3/h)	7093.33	7093.33			
Molar Enthalpy (kJ/kgmole)	-8.188e+004	-8.188e+004			
Mass Enthalpy (kJ/kg)	-4456	-4456			
Heat Flow (kJ/h)	-2.457e+007	-2.457e+007			
Molar Density (kgmole/m3)	3.4253	3.4253			
Mass Density (kg/m3)	62.942	62.942			
Std Liquid Mass Density (kg/m3)	---	---			
Molar Heat Capacity (kJ/kgmole-C)	49.646	49.646			
Mass Heat Capacity (kJ/kg-C)	2.702	2.702			
Molar Entropy (kJ/kgmole-C)	149.938	149.938			
Mass Entropy (kJ/kg-C)	8.160	8.160			
ThermalConductivity (W/m-K)	0.042	0.042			
Viscosity (cP)	0.014	0.014			
Surface Tension (dyne/cm)	---	---			
Molecular Weight	18.375	18.375			
Z Factor	0.883	0.883			

Outlet Properties : out

	Overall	Vapour Phase			
Vapour/Phase Fraction	1.0000	1.0000			
Temperature: (C)	27.01	27.01			
Pressure: (kPa)	7692.76	7692.76			
Molar Flow (kgmole/h)	300.00 *	300.00			
Mass Flow (kg/h)	5512.61	5512.61			
Liquid Volume Flow (m3/h)	16.82	16.82			
Std Gas Flow (STD_m3/h)	7093.33	7093.33			
Molar Enthalpy (kJ/kgmole)	-8.273e+004	-8.273e+004			
Mass Enthalpy (kJ/kg)	-4502	-4502			
Heat Flow (kJ/h)	-2.482e+007	-2.482e+007			
Molar Density (kgmole/m3)	3.6161	3.6161			

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Outlet Properties : out

	Overall	Vapour Phase			
Mass Density (kg/m3)	66.447	66.447			
Std Liquid Mass Density (kg/m3)	---	---			
Molar Heat Capacity (kJ/kgmole-C)	51.131	51.131			
Mass Heat Capacity	2.783	2.783			
Molar Entropy (kJ/kgmole-C)	147.484	147.484			
Mass Entropy (kJ/kg-C)	8.026	8.026			
ThermalConductivity (W/m-K)	0.040	0.040			
Viscosity (cP)	0.014	0.014			
Surface Tension (dyne/cm)	---	---			
Molecular Weight	18.375	18.375			
Z Factor	0.852	0.852			

Stream Compositions

Component	Inlet Mole Fraction	Outlet Mole Fraction
Methane	0.89592 *	0.89592 *
Ethane	0.04907 *	0.04907 *
i-Butane	0.00243 *	0.00243 *
n-Butane	0.00778 *	0.00778 *
CO2	0.01708 *	0.01708 *
H2S	0.00523 *	0.00523 *
i-Pentane	0.00188 *	0.00188 *
n-Pentane	0.00183 *	0.00183 *
n-Hexane	0.00026 *	0.00026 *
Propane	0.01208 *	0.01208 *
Nitrogen	0.00643 *	0.00643 *

* Specified by user.

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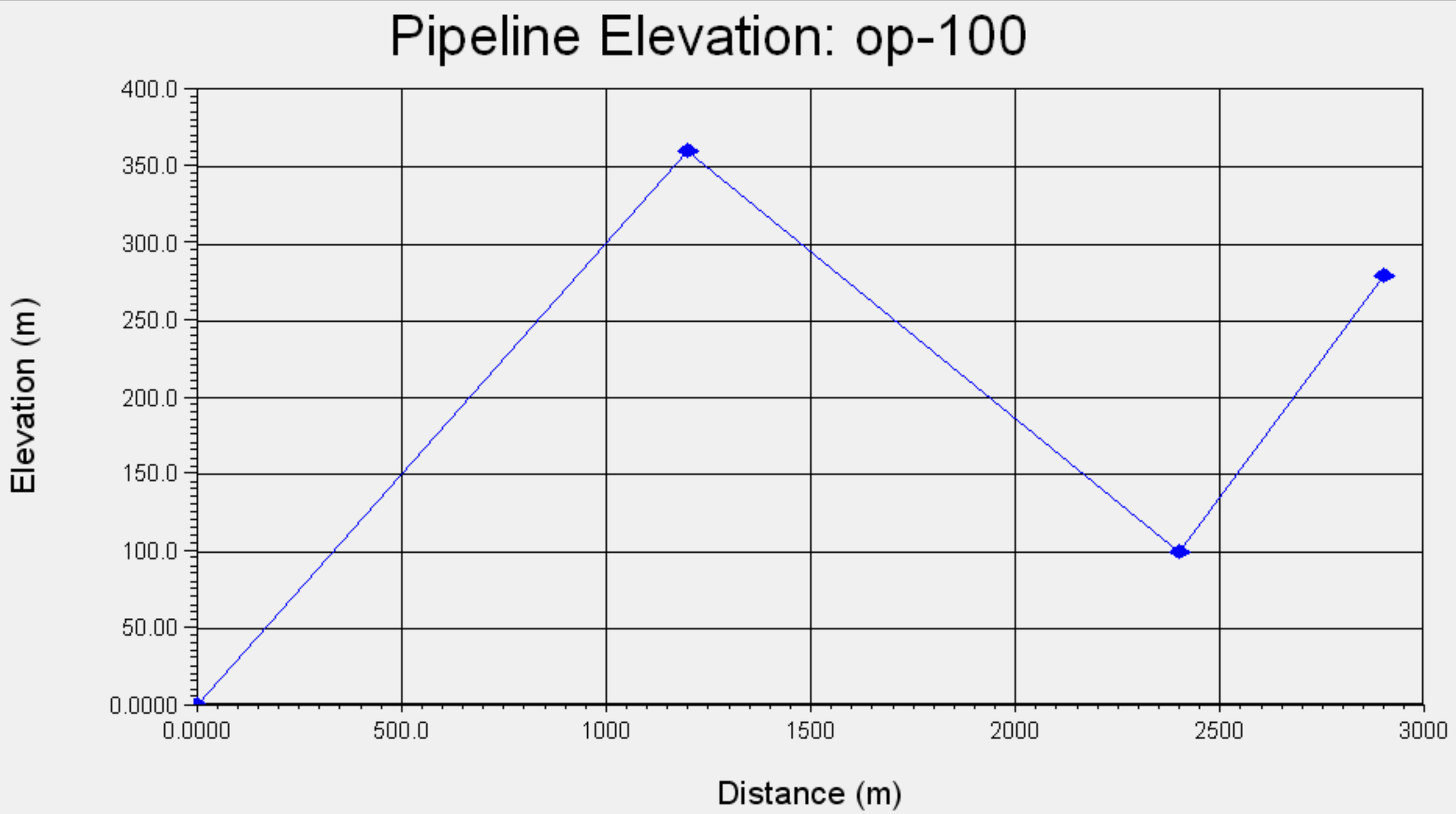
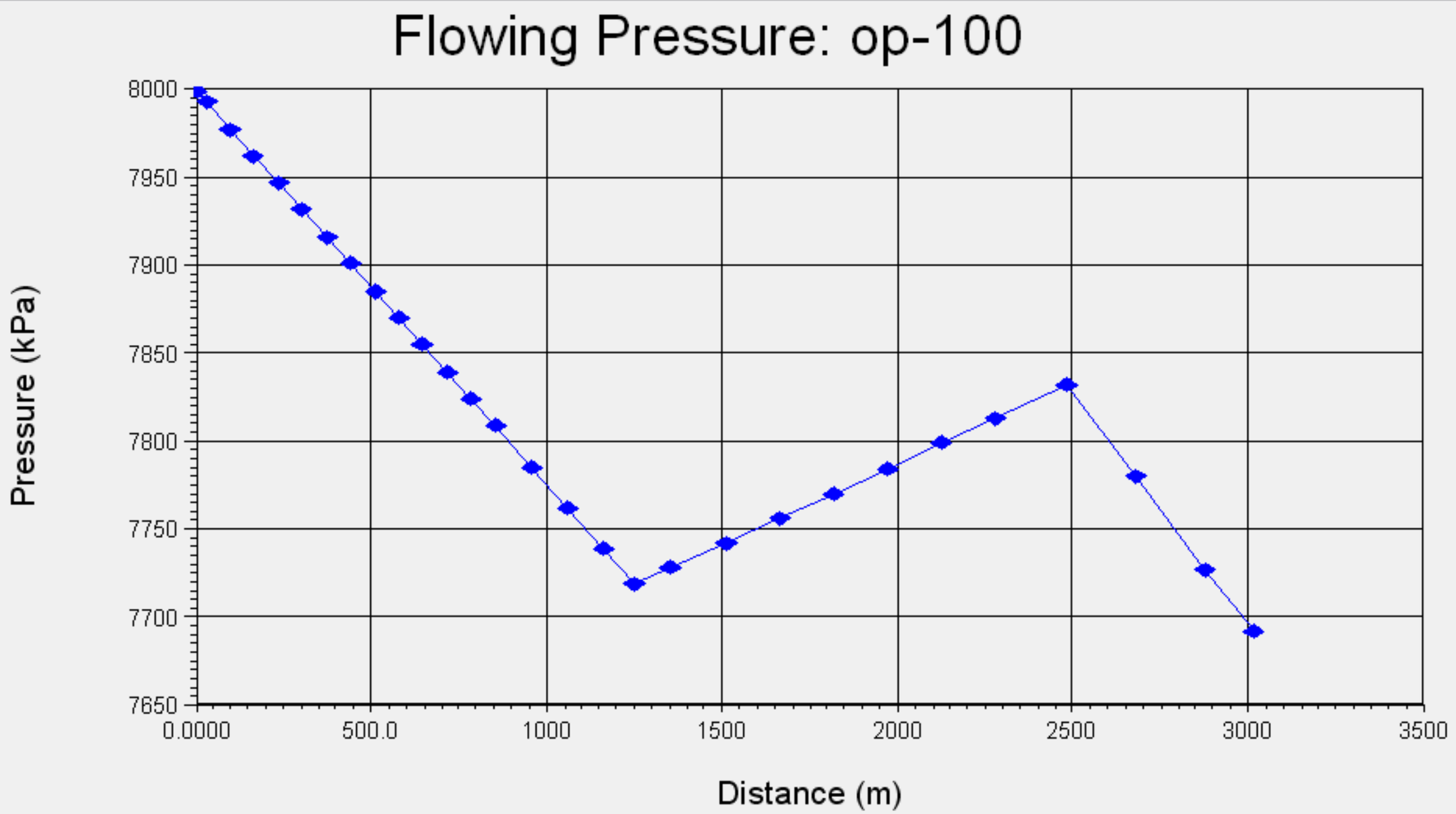
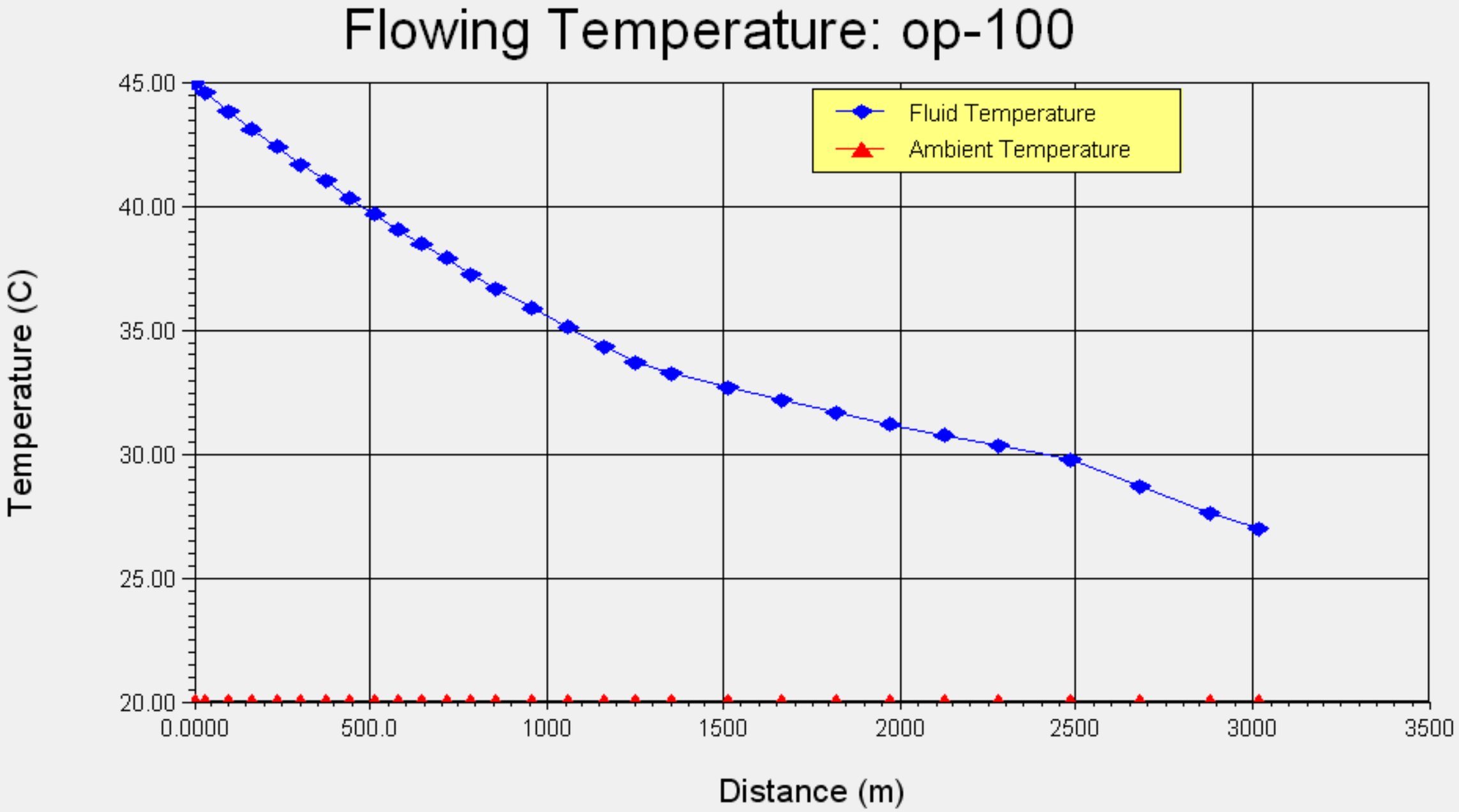
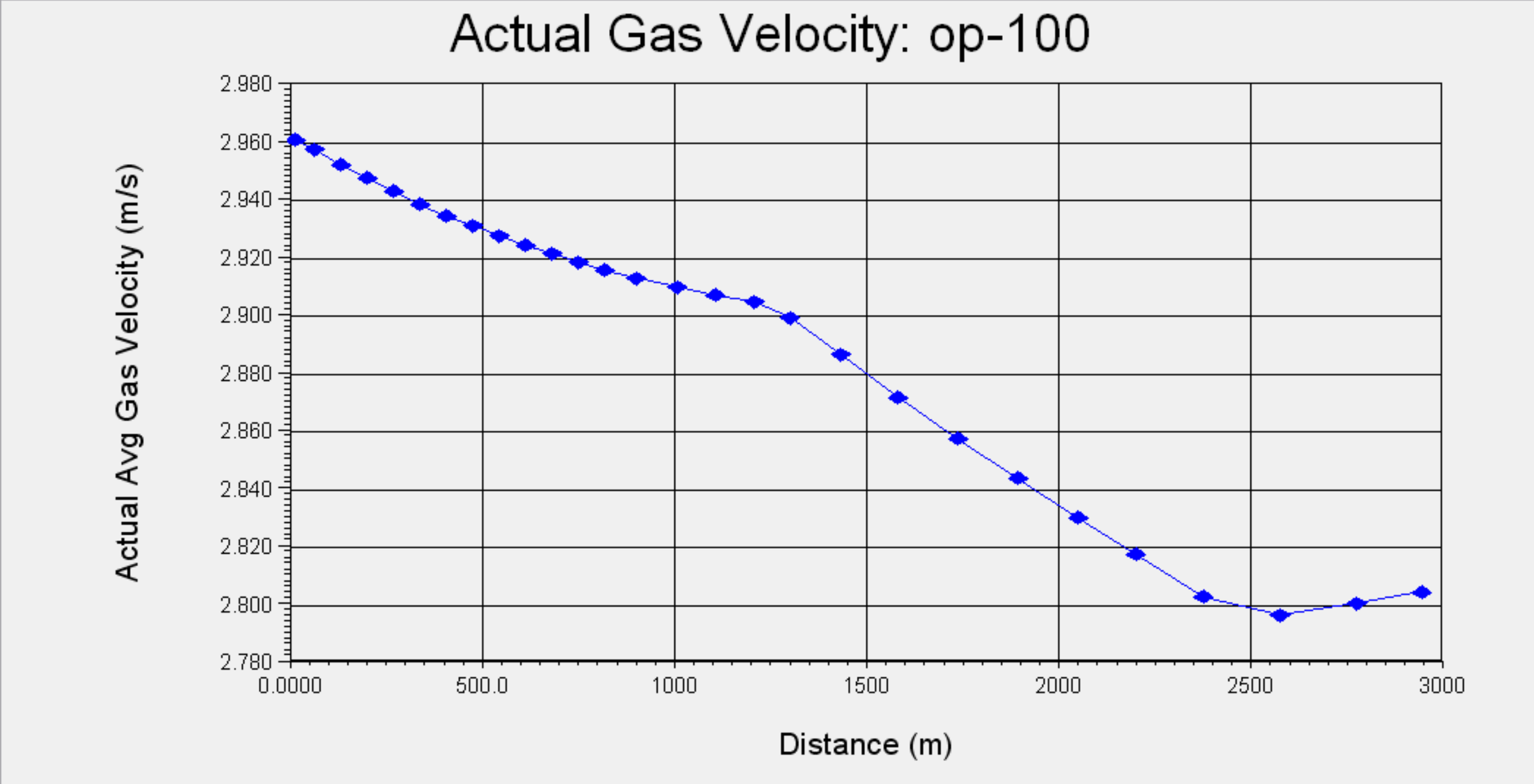
Summary

Upstream Pressure:	8000.00 kPa
Upstream Temperature:	45.00 C
Downstream Pressure:	7692.76 kPa
Downstream Temperature:	27.01 C
Predicted Pressure Loss:	307.24 kPa
Friction Loss:	131.76 kPa
Hydrostatic Loss:	175.46 kPa
Kinetic Loss:	0.021 kPa
Inline Facilities Loss:	0.00 kPa
Average Pressure Gradient:	-0.1020 kPa/m
Total Liquid Holdup:	0.0 m3
Total Line Pack @STD:	2072.5 m3
Pipe Volume:	24.7 m3
Net Heat Loss to the Surroundings:	2.383e+005 kJ/h


Pipeline Elevation: op-100
Elevation (m)
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.00
0.0000
0.0000
500.0
1000
1500
2000
2500
3000
Distance (m)


Flowing Pressure: op-100
Pressure (kPa)
8000
7950
7900
7850
7800
7750
7700
7650
0.0000
500.0
1000
1500
2000
2500
3000
3500
Distance (m)


Flowing Temperature: op-100
Fluid Temperature
Ambient Temperature
Temperature (C)
45.00
40.00
35.00
30.00
25.00
20.00
0.0000
500.0
1000
1500
2000
2500
3000
3500
Distance (m)


Actual Gas Velocity: op-100
Actual Avg Gas Velocity (m/s)
2.980
2.960
2.940
2.920
2.900
2.880
2.860
2.840
2.820
2.800
2.780
0.0000
500.0
1000
1500
2000
2500
3000
Distance (m)