Ambient Data on Outside of Pipe

Dry Bulb Temperature=	90.00 Degrees F
Ambient Dew Point Temperature=	82.93 Degrees F
Relative Humidity=	80.0000 %
Air velocity over Pipe or Duct=	100.0000 Ft/Min
	1.1364 Miles/Hr

Pipe or Duct Data

Pipe ID=	12.0000 Inches
Pipe OD=	12.7500 Inches
Pipe or Duct Internal Area=	0.7854 Sq. Ft.
Pipe or Duct Material=	Steel
Pipe or Duct Thickness=	0.3750 Inches
Pipe or Duct Pressure=	10.0000 Inches Water
Pipe or Duct Thermal Conductivity=	350.4230 Btu-In/Hr-Sq/Ft-F

Air Flow Inside the Pipe or Duct

Dry Bulb Temperature=	45.00 Degrees F
Dew Point Temperature=	39.0522 Degrees F
Inside Pipe or Duct Surface Temp.=	45.3398 Degrees F
Condensation??	NO
Relative Humidity=	80.0000 %
Mole Fraction of Water in Mix=	0.007796
ACFM=	1,963.4954 Ft/Min
Inside Air Flow Velocity=	2,500.00 Ft/Min
	41.6667 Ft/Sec
Dew Point Temperature=	39.0522 Degrees F
Dry Bulb Temp.at End of Run=	45.2557 Degrees F
Condensation???	NO

Percentages of Gases in Mixture

	% Volume	% Mass
Nitrogen	77.4753	75.1465
Oxygen	20.7843	23.0275
Argon	0.9609	1.3290
Water	0.779592	0.486282

Air Density Inside Duct=	0.0803 Lbs/Ft3
Thermal Conductivity of Air Mix	0.0139 BTU/Hr-Ft-F
Absolute Viscosity of Air Mix	.0000113127 lb/Ft-Sec
	168.3830 Micropoise
Specific Heat of Air mix=	0.2403 BTU/lb - F
Reynolds #	295,238.1012
Prandtl #	0.7041
Nusselt #	475.2557
Inside Pipe or Duct air film=	6.6010 BTU/Hr-Ft2-F
Inside Air Film Resistance=	0.1515 Hr-Ft2-F/BTU

Insulation and Jacket Data

Insulation Type=	Other Fiberglass - pipe (850 F)
Insulation Thickness=	3.5000 Inches
Type of Jacket=	ALUMINUM JACKET - OXIDIZED
Jacket Thickness=	0.0160 Inches
Insulated Pipe OD=	19.7820 Inches

```
Outside Surface Temperature=          85.6359 Degrees F
Ambient Dew Point Temperature=        82.9302 Degrees F
Condensation??                           NO
Average Temp Across Insulation=       65.3178 Degrees F
Insulation Thermal Conductivity=       0.2198 BTU-Inch/
                                              Hour-Ft2-F

Jacket Emissivity=                     0.1100
```

Energy Data

```
Linear Feet of Pipe or Duct=          50.000 Feet
Pipe or Duct Area per Linear Foot=     5.1789 SqFt./Lin Ft.
Total Outside Area=                  258.9458 Sq. Ft.
Surface Shape and Orientation=  Horizontal Pipe


Free Convection 'C' Value=             1.0160
Convection Heat Loss Coefficient (HCV)=  0.3902 Btu/Hr-Ft2-F
Radiant Heat Loss Coefficient (HR)=    0.1237 Btu/Hr-Ft2-F
Inside Air Film Resistance=            0.1515 Hour-Ft2-F/Btu
Outside Air Film Resistance=           1.9459 Hour-Ft2-F/Btu
Pipe or Duct Resistance=              -0.00107014 Hour-Ft2-F/Btu
Insulation Resistance=                15.9255 Hour-Ft2-F/Btu
Total Resistance=                     18.0239 Hour-Ft2-F/Btu
Heat Flow FT2=                         2.2427 Btu/Hr/Ft2
Heat Flow Lineal Foot=                11.6150 BTU/Hr/Lin Ft
Total Heat Flow per Hour=            580.7485 Btu/Hr.
```

                                                                nesjr