FORM TO SPECIFY INPUT DATA FOR
VISCOSITY/CONDUCTIVITY MODEL MUARDC

This subroutine calculates the atmospheric molecular viscosity using the ARDC formula for viscosity and calculates atmospheric thermal conductivity from the value of viscosity using a Prandtl number specified by the user. This model is used only to calculate acoustic absorption when either AWWWL or ANWWL is used.

The ARDC formula for viscosity is (U.S. Standard Atmosphere, 1976, p. 19, NOAA, NASA, USAF, U.S. Government Printing Office, Washington, D.C., October 1976)

$$\mu = \beta\ T^{3/2}/(S+T)\ ,$$

where T is the atmospheric temperature in Kelvins.

The atmospheric thermal conductivity using the Prandtl approximation (e.g., Francis Weston Sears, Thermodynamics, Addison-Wesley, 1956, pp. 267-9) is

$$\kappa = \gamma\ R\mu/((\gamma-1)M\ Pr),$$

where γ is the ratio specific heats = 1.4,
R is the universal gas constant,
and M is the mean atmospheric molecular weight.

Specify --

the model check for subroutine MUARDC = ____1.0____(W500)

the input data-format code = _____(W501)

an input data-set identification number = _____(W502)

an 80-character description for the absorption model, including description of parameter values:

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the viscosity constant, β = _____kg s^{-1} m^{-1} K$^{-1/2}$ (W503)
(1.458 × 10^{-6} kg s^{-1} m^{-1} K$^{-1/2}$ suggested)

Sutherland's constant, S = _____Kelvins (W504)
(110.4 Kelvins suggested)

Prandtl number, Pr = _____(W505) (0.733 suggested)

OTHER MODELS REQUIRED: Any atmospheric temperature model and any atmospheric molecular weight model.