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ATR5/PC

A Computer Code and Model of Radiation Transport in Air for PC

ATR5/PC calculates free field environments from initial radiation of nuclear weapons. Initial radiation is defined as that emitted in first 60 seconds after the explosion is initiated. Radiation components treated by **ATR5/PC** include prompt neutrons, prompt gamma rays, secondary gamma rays, delayed (fission product) gamma rays and x-rays. Kerma, dose and energy and angle differential fluence can be calculated for any combination of weapon specifications supplied by the user. The program can account for source height, target height and atmospheric density and moisture content.

ATR5/PC contains parametric models for a comprehensive transport database for neutrons and secondary gamma rays, gamma rays and x-rays in uniform air. That data base is produced using the one-dimensional discrete ordinates, transport code, ANISN, and the DLC-113/VITAMIN-E 174n, 38g energy group cross section library. The models reproduced the data base energy and angle differential fluences, given the input of problem geometry and source spectra and are used to calculate such quantities based on the mean density between any two points specified within the context of an exponential atmosphere model which is built into the code. Mass-integral scaling is used to adjust fluence values for density variations. Perturbations due to air moisture variations are modeled based on ratios of tissue kerma for each source energy group.

ATR5/PC code accepts arbitrary input spectra for all source components except fission product gamma rays. A regroup utility is provided to allow that input to be in any multi-group or point differential format. Unclassified fission and thermonuclear source spectra are provided internal to the code. The code contains many fluence-to-dose conversion factors for neutrons and gamma rays and can accept user input values for such quantities. The user may specify the energy-differential output group boundaries. The angle-differential output format corresponds to that of an S8 quadrature set for all components except x-rays, which are output in a one-dimensional S16 quadrature set.

We at **Galaxy Advanced Engineering, Inc. (GAE)** have taken steps to make this code available on your PC platform under PC/DOS or PC/Windows95/98/2000/XP/ME or NT operating system. To obtain the code and more information, please contact our company or call us at 650-302-3993.