*fuel* 10,000 MWD per ton is about 1 per cent burn-up

NEGATRON Another word for a *beta particle*

NEUTRINO A particle resulting from *nuclear reactions* which carries energy away from the system but has no mass or *charge*, and is absorbed only with extreme difficulty

NEUTRON One of the three basic atomic particles The neutron weighs about the same as the *proton*, and, as its name implies, has no electric charge Neutrons make effective atomic projectiles for the *bombardment* of *nuclei*

NUCLEAR BATTERY A device in which the energy emitted by *decay* of a *radioisotope* is converted first to heat and then directly to electricity

NUCLEAR BOMBARDMENT The shooting of atomic projectiles at *nuclei* usually in an attempt to split the *atom* or to form a new *element*

NUCLEAR ENERGY The energy released in a *nuclear reaction*, such as *fission* or *fusion* Nuclear energy is popularly, though mistakenly, called *atomic energy*

NUCLEAR EXPLOSION The rapid *fissioning* of a large amount of *fissionable* material It creates an intense heat and light flash, a heavy blast, and a large amount of *radioactive fission products* These may be attached to dust and debris forming *fallout* Nuclear explosions also result from nuclear *fusion*, which does not give radioactive fission products

NUCLEAR REACTION Result of the *bombardment* of a *nucleus* with atomic or subatomic particles or very high energy *radiation* Possible reactions are emission of other particles or the splitting of the nucleus *(fission)* The *decay* of a *radioactive* material is also a nuclear reaction *Fusion* is also a nuclear reaction

NUCLEONICS The application of nuclear science and techniques in physics, chemistry, astronomy, biology, industry and other fields

NUCLEUS The inner *core* of the *atom* It consists of *neutrons* and *protons* tightly locked together

PAIR PRODUCTION The conversion of a *gamma ray* into a pair of particles—an *electron* and a *positron* This is an example of direct conversion of energy into matter according to Einstein's famous formula $E = mc^2$, (energy) = (mass) × (velocity of light)$^2$

PHOTOELECTRIC EFFECT Occurs when an *electron* is knocked out of an *atom* by a light ray or *gamma ray* This effect is used in an "electric eye" Light falls on a sensitive surface knocking out electrons which can then be detected

PHOTON A bundle *(quantum) of radiation* Constitutes, for example, *X rays* and light *Gamma rays* are also photons

PIG A container (usually lead) used to ship or store *radioactive* materials The thick walls protect the person handling the container from *radiation*

PILE A nuclear *reactor* Called a pile because the earliest reactors were "piles" of graphite blocks and *uranium slugs*

PITCHBLENDE An ore containing both *uranium* and *radium* The Curies had to purify tons of pitchblende to obtain a barely visible speck of radium

PLUTONIUM A heavy *element* which undergoes *fission* under the impact of *neutrons* It is a useful *fuel* in nuclear *reactors* Plutonium cannot be found in nature but can be produced and "burned" in reactors

POISON A material introduced into the *reactor core* to absorb *neutrons* The *element* boron is a popular poison, and it is used in *control rods*

POSITRON A particle which has the same weight and charge as an *electron* but is electrically positive rather than negative The positron's existence was predicted in theory years before it was actually detected It is not stable in matter because it reacts readily with an *electron* to give two *gamma rays*

PROTON One of the basic particles of the atomic *nucleus* (the other is the *neutron*) Its charge is as large as that of the *electron*, but positive

Q-VALUE The energy liberated or absorbed in a *nuclear reaction* is its Q-value

RABBIT A capsule which carries samples