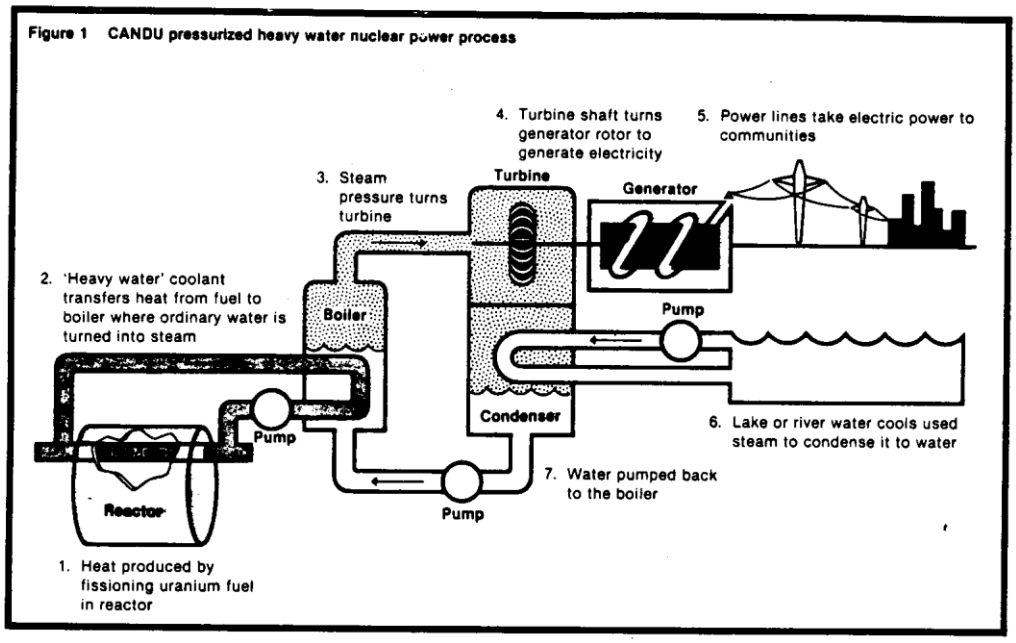
THE CANDU REACTOR

- The process in all nuclear reactors are very similar no matter what type of design they employ
- All nuclear reactors are involved in ***controlled nuclear fissions***
    - After about 100 nuclear fissions, 250 neutrons are produced
    - Of these 250 neutrons released:
        - 7 escape the fuel rods and do nothing
        - 128 are absorbed by uranium-238 (makes ^{239}Pu)
        - 15 absorbed by uranium-235 but no new fissions result
        - 100 start new fissions

- the fuel is a mixture of uranium-235 and uranium-238 (^{235}U is under critical mass)
- once the nuclear fission takes place, neutrons are released which can be used to split other uranium atoms (only one of the neutrons will released will cause 1 new fission)
- these neutrons are traveling too fast to cause any fission with uranium-235 so they are slowed down by using a moderator (water, graphite, etc.)
- power level is determined by how far into the reactor the ***control rods*** are inserted
- these control rods absorb neutrons and if dropped into the reactor completely, will absorb all of the neutrons and fission will stop

(Fig. 1 – Candu Reactor)