وب سایت پرتویار

Nuclear Code Fork is a computer code for calculating the stable, thermo-mechanical behavior of oxide fuel rods in long-term fuel. Reliable prediction of the behavior of nuclear fuel rods of nuclear power reactors, the basic demand for safety-based calculations, for Forms the goals of designing and evaluating fuel performance. There are many nuclear fuel operation codes, some of which are publicly available. Recent fuel design and improvement activities have focused on increasing fuel combustion and the use of new materials.

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Definition of words

Elastic deformation:

If a body deforms due to the application of a force and returns to its original state after the removal of that force, it is called elastic deformation.

Plastic deformation:

If a body deforms due to the application of a force and does not return to its original state after the removal of that force, it is called plastic deformation.

Fuel pods:

Exhausted fuel rods are classified into fuel assemblies that are used to build the core of a power reactor. The outer layer of fuel rods that stands between the coolant and the nuclear fuel is called the fuel sheath.

Fuel pods

What does Frapcon code do?

FRAPCON-3 is a computer code written with Fortran 90 that calculates the steady state response of light water reactor fuel rods during long-term combustion. This code calculates the temperature, pressure and deformation of a fuel rod as fuel rod power functions depending on the cooling time and boundary conditions.

Phenomena modeled by the code include:

1) heat transfer through fuel and pods to the cooler;

2) elastic deformation and plasticity of fuel pods;

3) mechanical interaction of the fuel pod;

4) fission gas emission from the internal pressure of the rod and fuel; And

5) Oxidation of fuel pods

This code contains the material properties, water properties and heat transfer correlations. FRAPCON-3 is intended for use on Windows-based computers, but source code may be compiled on any computer with the Fortran 90 compiler.

The FRAPCON-3 code is designed by FRAPTRAN computer code to perform steady state fuel rod calculations and create the initial conditions for transient fuel rod analysis.

Frapcon code versions

Different versions of Frapcon include

Version 1.5

Version 2

Version 3

Version 4

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Communication between Frapcon and FrapTran code

The Frapcon code is a code for performing calculations in steady state and the Fraptran code is for performing calculations in transient mode. So it can be said that this code is actually complementary

Downloadable documents

FRAPCON guide

FRAPCON evaluation

Material properties file in FRAPCON