ABSTRACT

The CORD-2 package, developed at “Jožef Stefan” Institute, enables determination of the core power distribution and reactivity. Core distributions data generated during the calculation process are stored in CORlib files. CORDSP code, which is a part of the CORD-2 package, displays and compares data contained in CORlib files. Since it runs in the DOS environment, there are several limitations in the presentation of desired data. A CORDSPW package runs in the Windows environment and offers better graphical interpretation of the CORlib data. Core distributions can be displayed, compared, rewritten in the new files and sent to the printer. The user can select the appropriate display of the presented data such as core symmetry, colour and fonts. Core radial and axial distributions can be presented and compared. There are several options to store and print data. The user can choose between standard ASCII and graphical JPG format.

1 INTRODUCTION

The CORD-2[1] package, developed at “Jožef Stefan” Institute, enables determination of the core power distribution and reactivity. The package has been validated for the nuclear design calculations of PWR cores. Core distributions data (e.g. power, temperatures, burnup, etc.) generated during the calculation process are stored in CORlib files. CORDSP code, which is a part of the CORD-2 package, displays and compares data contained in CORlib files. Since it runs in the DOS environment, there are several limitations in the presentation of desired data. A CORDSPW package runs in the Windows environment and offers better graphical interpretation of the CORlib data.

The user can select radial full core or quadrant core graphical interpretation. The package enables presentation of the data also in the form of tables or graphs. Different fuel assembly data can be shown in specific colours regarding the magnitude of the numeric values or assigned different labels. Colours can be defined by the user and the appropriate selection is stored on the files for subsequent use. All on the screen views can be separately stored in graphical JPG files. All CORDSP functions are supported in the CORDSPW package.

2 ADVANTAGES

Advantages of the CORDSPW package are:

- Simple preparation of the input data. The user has at all times complete overview of the selected options and input parameters.
- User friendly code execution and clear visual presentation of the results.
- Colours can be used to interpret numerical values or specific characteristics.
- Results can be shown on the screen as graphs or JPG pictures. All presented views can be also printed.

3 USERS INTERFACE AND ITS FUNCTIONS

3.1 Input preparation and the code execution

All input parameters and basic options are in the code main window:

- CORlib file name,
- keywords of the available parameters,
- burnup, if the selected parameter has burnup dependence,
- basic output formats,
- main code options.

In auxiliary window additional parameters such as colours, fonts and specific display options are available.

The code is controlled through the main code options. Data selected by the user can be displayed, stored, printed and compared. Data storage can be accomplished in different formats - JPG pictures, ASCII LOG or CORlib format files. Sample main window is presented in figure 1.

3.2 Presentation of the data

Selected data can be presented in several ways:

- On the screen in the full core or quadrant core geometry,
- as a JPG graphical pictures,
- output in the CORlib format,
- as an ASCII LOG file.

Typical screens are presented in figures 2, 3 and 4.
Figure 1: Main window used to access and edit input parameters and setup parameters used for graphical presentation of the output data.
Figure 2: Full core display of the selected parameters. Zoom window is present. Colour is determined from the fuel assembly identifier (label). Each label has its own colour.
Figure 3: Full core display of the selected parameters. Colour is determined from the magnitude of the numerical parameter.
Figure 4: Full core display of the selected axial parameter. A few assemblies are presented in the graph.

3.3 Comparison of CORLIB files

Compare command in the main window enables comparison of the selected parameters in the two CORlib files. The compared CORlib file name should be defined by the user. Differences can be shown in all the ways as a basic parameter (figure 5).

3.4 Data printing

Data printing is very simple for the user. It is controlled from the main window. The code uses common Windows drivers. Preview is shown each time on the screen before actual printing occurs (figure 6).
Figure 5: Comparison of two CORlib files at different burnup steps.
CONCLUSIONS

The CORDSPW package enables graphical interpretation of the core radial and axial distributions that are stored in the standard CORD-2 CORlib format. It is a user friendly package, which runs in the Windows environment. Preparation of the input data is very simple. The user can select the appropriate display of the presented data such as core symmetry, colour and fonts and has at all times complete overview of the selected options and input parameters. There are several options to store and print data. The user can choose between standard ASCII and graphical JPG format.

REFERENCES


[2] Copyright (c) Alaska Software 1997-2006. All rights reserved.