

Nuclear Data Evaluation Activities in JAEA and the Mid-Term Plan

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Japan Atomic Energy Agency (JAEA) was established at October 1, 2005. The activities relating to nuclear data evaluation in JAEA are described.

1. Introduction

Japan Atomic Energy Agency (JAEA) was established at October 1, 2005 after the merger of Japan Atomic Energy Research Institute (JAERI) and Japan Nuclear Cycle Development Institute (JNC). Missions of JAEA are described as followings: (1) Establishment of nuclear fuel cycles, (2) Research and development of nuclear fusion energy, (3) Contribution to hydrogen economy by nuclear process heat, (4) Quantum beam technology, (5) Research on nuclear safety, (6) Non-proliferation and safeguards technology, (7) Decommissioning of nuclear facilities, treatment and disposal of low level waste, (8) Cooperation with academic and industrial communities/ international collaboration/ human resource development/ atomic energy information and (9) Basic nuclear engineering research, advanced basic research. The nuclear data evaluation activities are included in the mission of (1) and (9). In order to perform the missions, the nuclear data evaluation work is carried out in JAEA.

2. Mid-term plan

When JAEA was established, the mid-term plan was issued to the Minister

of Education, Culture, Sports, Science and Technology and was approved by the minister. The mid-term plan is the work list JAEA promises to perform during the mid-term from October 1, 2005 through March 31, 2010. In the mid-term plan the nuclear data activities are written in two parts. One is the activities relating to the development of nuclear conversion system including FBR and ADS systems. In the part nuclear data evaluation is written as “Design precision will be enhanced by establishing nuclear data for nuclear conversion target MA and LLFP, establishing nuclear design code, and conducting reactor physics experiment. Through the acquisition of physical property of fuel containing MA, and test production of target containing LLFP, we will contribute to building a base for nuclear conversion technology”. (From the JAEA English home page. <http://www.jaea.go.jp/english/index.shtml>). The second one is relating to the basic nuclear engineering research. In the part it is written that “With fuel burn-up rate becoming higher, FP and MA nuclide will be playing increasingly important role. Thus, efforts will be made to mainly assess such nuclear data, and to complete JENDL-4, the General-Purpose, Pre-Assessed Nuclear Data Library featuring expansive error data, so to enhance the reliability of nuclear calculation.” (From the JAEA English home page. <http://www.jaea.go.jp/english/index.shtml>). So the missions of Nuclear Data Center are to complete the Japanese Evaluated Nuclear Data Library JENDL-4 (Japanese Evaluated Nuclear Data Library) and to provide the nuclear data for development of nuclear conversion system until the end of the mid-term.

3. Nuclear Data Evaluation Activities

Although we have a mission to provide the necessary nuclear data for development of nuclear conversion system, we consider that the primary purpose of our group is to complete JENDL-4. The main effort to compile the JENDL-4 library focus on the nuclear data evaluation of minor actinide (MA) nuclides and fission product (FP) nuclides and the provision of more covariance data than the present evaluated nuclear data library JENDL-3.3. The planned schedule for the development of JENDL including the development of high energy relating files is shown in Fig. 1.

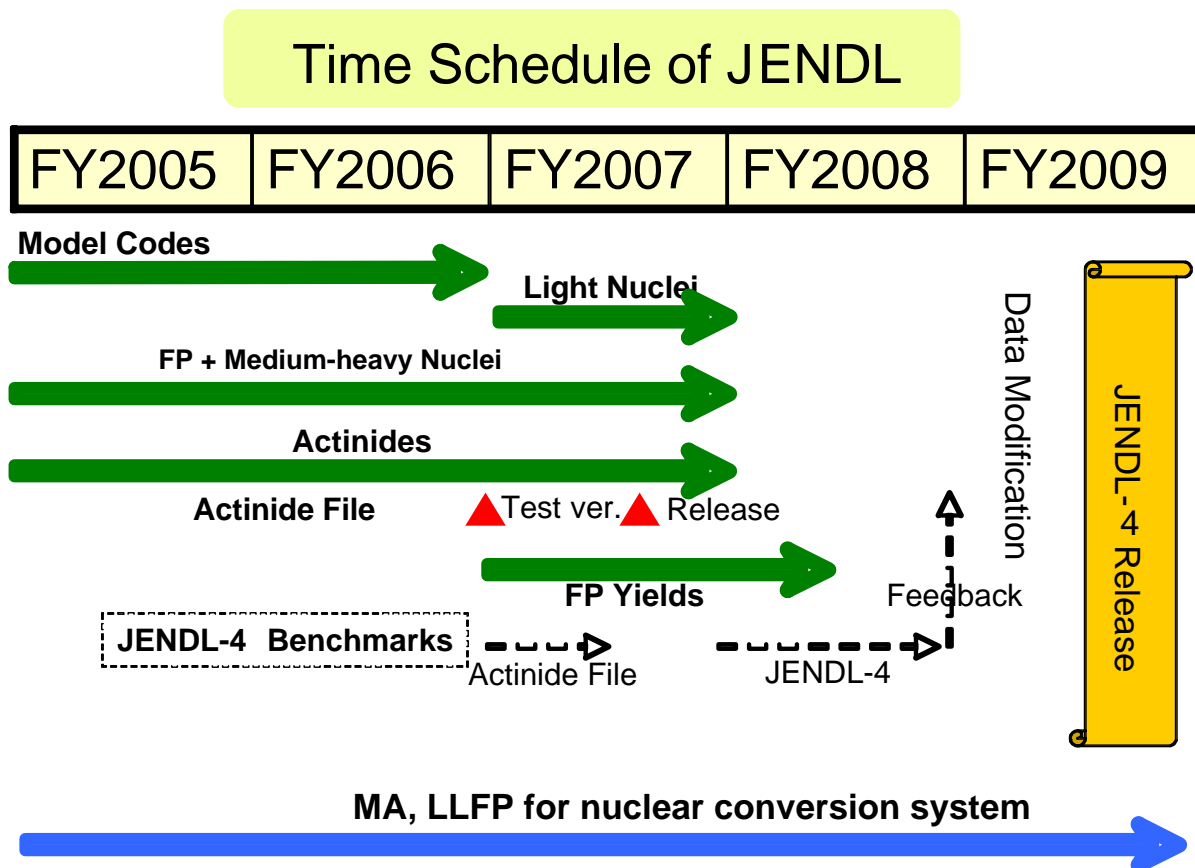


Fig. 1 Planned Time Schedule of JENDL Development

As seen in Fig. 1, benchmark tests of JENDL-4 are indispensable to ensure the performance of the nuclear data included. We have to cooperate for the tests with reactor engineers who have the activities to perform the calculation using the nuclear data. The benchmark tests will be performed by not only other research groups in JAEA but also the groups outside JAEA.

In JAEA there is a research group which has the activity of nuclear data measurement. The group has the plan to obtain the measured data of minor actinide and long-lived FP nuclides. Nuclear data center keeps close contact with the group to obtain the up-to-date measured data. When new measured data are obtained we are going to use them for new evaluation.

4. Summary

Under the new organization, Japan Atomic Energy Agency, the nuclear data evaluation is performed based on the mid-term plan which is approved by the Minister of Education, Culture, Sports, Science and Technology. In the plan, the

goal of the nuclear data evaluation work is to complete the JENDL-4 library until the end of the term. In the work of the JENDL-4 compilation, main effort focuses on the evaluation of MA and FP nuclides and covariance data in addition to solving the problems of the JENDL-3.3 nuclear data.

The Nuclear Data Center in JAEA continue the effort to compile and to maintain the Japanese Evaluated Nuclear Data Library JENDL.