

話 題 (IV)

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日本原子力研究所核データセンター

菊池 康之

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出席者 :

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議 事

本委員会は IAEA 核データセクション (NDS) の活動を審議し、事務局長に勧告を行うものである。冒頭事務局次長町末男氏の挨拶で、最近核データ活動に対して IAEA 内のサポートは少なくなっており、プロジェクトのプライオリティー付けが重要であるとの指摘があった。また事務局長付きの Cherif 氏から IAEA では核データ活動を INDC と独立にレビューする会合（日本からは有馬理研理事長が出席予定）を計画しており、この結論が重要なポイントとなることが予想されとの説明があった。この厳しい状況の下で、新議長 R. Meyer (USDOE) は INDC の議論を、従来の世界の核データ活動の調整を図るという学際的側面を切り捨て、IAEA/NDS の活性化に絞ることにし、NDS の活動報告を受けた後 4 サブコミティーで議論をし勧告を行った。（勧告の要点は別添 1）

a) IAEA/NDS の現状

NDS の予算は 1995 年に 10%、1996 年に 14% の削減を受けた。その結果専門家 (P) ポストを 2、一般 (G) ポストを 1 削減した。また核データの測定のサポート、核

データのプロセッシングを打ち切り、Trieste (Italy) でのトレーニングコースを廃止せざるを得なかった。

データサービスに関しては、NDS で独立に VAX を持ちオンラインサービスを始めて好調に進んでおり、INDC も満足している。

b) 核データセンター運営及びデータ交換（サブコミッティー I（議長菊池）報告）

- ・ NDS は基礎データベースの維持に努めなくてはならず、とくに CINDA、EXFOR は重要。
- ・ NDS の計算機によるデータサービスをさらに推進すべきである。
- ・ 多様化する核データに対応する必要がある、途上国からの処理済データの要求にも対処する 必要がある。また国際標準データについてもキーロールを果たすべきである。
- ・ 『核データ流通は無償』の原則は堅持すべきである。

c) 応用技術に対する核データニーズ（サブコミッティー II（議長 Qaim）報告）

- ・ 多様化するニーズに応じて効率良く対処するため、情報サービスが最重要である。
- ・ 国際核融合核データファイル (FENDL) の様な核データ評価の協力、調整活動が続けるべきである。
- ・ IAEA 協力研究 (CRP) としては①アイソトープ生産用荷電粒子データ、②廃棄物処理のための FP 収率データ、③核融合のための放射化データ、④核模型計算用標準インプットパラメータ、⑤光核反応データの 5 つの開始が承認された。

d) 核データ技術移転（サブコミッティー III（議長 Kapoor）報告）

- ・ NDS は途上国の核データ活動活性化のための研究協力等を行うべきである。
- ・ トレーニングコースの開催、途上国から IAEA 等への招へい活動を続けるべきである。
- ・ 途上国のニーズに合わせた核データ処理活動を再開すべきである。

e) 標準データ（サブコミッティー IV（議長 Condé）報告）

- ・ NDS は標準データ・ライブラリーを維持発展させる必要がある。
- ・ 高エネルギー標準データの CRP の必要性を考える必要がある。

f) 一般勧告

- ・ 現在の予算は、核データのニーズから見ても低すぎて再考すべきである。
- ・ 計画の継続性のため長期契約スタッフの比率を上げる必要がある。
- ・ NDS のプログラムを新しいデータニーズに応じて拡大する必要がある。

g) フォローアップ

IAEA における NDS の立場が厳しくなっていて、INDC も従来の学際的立場から、経営的な議論を中心にするように変質した。また INDC の勧告を学会のみでなく

行政府にも伝えることを求められ、終了後在ウィーン代表部の書記官に会い INDC 勧告実施の支持を要請した。

h) 議長選出問題

今回の議長の選出方法が不明瞭であり、ルールの確立が必要であるとの当方の指摘に対して、委員の大多数がアルファベット順の機械的選出法に疑問を持っていたこと、Meyer への支持が一番多かったことが報告された。今後の選出法に関しては、サブコミッティー議長をメンバーとする選考委員会が推薦をすることになった。

菊池の感想としては、INDC の性格が今回のように学際的から経営的になったなら（その善し悪しには議論があろうが）、研究者レベルではなかなか対応できないとの印象を受けた。実際に Meyer は会議の一週間前からウィーンに来て、主要国の代表部や IAEA の上級職員と接触したりしていた様である。

INDC Executive Summary

The IAEA's International Nuclear Data Committee (INDC) met at the Agency Headquarters in Vienna from 3 to 7 April 1995. In response to the charge from the senior management of the Agency, the INDC has focused on the programme and performance of the IAEA's Nuclear Data Section (NDS). The INDC is now organized into four oversight sub-committees. Highlights of each subcommittee's deliberations and findings are attached to this summary. During the INDC's five day meeting, presentations were made by the NDS concerning its mission, goals and on going modus operandi. This executive summary of the INDC's findings and recommendations has been prepared for the IAEA management. A more detailed report will be forthcoming.

The INDC emphasizes that nuclear data information is at the core of the development, implementation, and utilization of all nuclear technologies. At present, the effort required to provide the needed information far exceeds available worldwide resources. The IAEA's NDS serves in a unique and preeminent position bringing together the worldwide nuclear data effort. This coordination ensures that the information is made available at a minimum cost and without duplication. The NDS represents an irreplaceable international resource which has successfully performed this coordinating function. Without the Agency's program of work, the coordinated international nuclear data activities would collapse causing a crisis in the development and application of nuclear data technology.

As a result of its deliberations, the INDC concludes that

- The Agency has a unique capability, not reproducible anywhere else, and that the Nuclear Data Section
 - is operated in a highly professional and cost-effective manner
 - is essential to satisfy the nuclear data needs of ALL Member States
 - is the only focal point for meeting the nuclear data needs of the developing countries
- Impressive progress has been made by the Agency's Nuclear Data Section, in the past 2 years, in particular:
 - Modernization of its computer operations
 - Implementation of computer networks for data dissemination
 - Completion of a nuclear design data base for ITER (FENDL-1)
 - Successful completion of an IAEA/ICTP workshop on nuclear data and reactor physics applications
 - Initiation of several international coordinated research programs (CRPs) on data for developing technologies.
- The effective use of limited international nuclear data resources is essential and is accomplished through
 - the coordination of the nuclear data centre networks
 - CRPs and other data improvement projects such as FENDL

- Budget reductions for 1995 and beyond and the high rate of staff turnover in the next 2 years have serious negative long term consequences especially
 - the loss of two senior level scientific positions (P-4)
 - the loss of critical long-term staff especially in computing and information services
 - the loss of a nuclear data processing activity

The INDC recommends that

- The present funding level should be reconsidered as it is inadequate to meet the basic requirements.
- A higher proportion of long-term staff be achieved in order to ensure continuity of the programme.
- The Agency Management should recognize the basically technical nature (as opposed to administrative) of the Agency's nuclear data programme.
- The focus of the nuclear data program should expand to include to the newly emerging applications of nuclear technology.
- The data center's services must continue to satisfy the changing user requirements.
- Training courses and fellowships in nuclear data should be expanded in order to build the necessary infrastructure in developing countries.

Executive Summary Report of Subcommittee 1

Nuclear Data Center Operations and Data Exchange

Rationale

The Subcommittee reviewed the Data Centre activities and the coordination of Data Centre Networks. The objectives of NDS include the maintenance of a broad spectrum of nuclear databases, the provision of data centre services to a wide spectrum of countries and nuclear technology applications, and the international coordination of nuclear data centres.

Conclusions and Recommendations

NDS must maintain a fundamental base of data activities to address the everchanging challenges presented to it.

Particularly, continuous update and maintenance of CINDA and EXFOR and a variety of general and special-purpose databases are indispensable. Because of the subcritical size of any single data center, it is mandatory that NDS continues the coordination of the International Nuclear Data Centre Networks as an ongoing endeavour.

Continuation of the present computerization of NDS activities is essential for its efficient and successful operation in the future.

The planned upgrade of the computer system is a step in the right direction. The centre must keep up with the rapid developments in computer technology, especially with regard to the fast development of information dissemination over computer networks.

NDS and the data centre networks must give support to the new developments addressed in Subcommittee 2.

Extended types of nuclear data, in particular higher energy data, are needed for traditional and new applications. Requirements for processed data increase rapidly in developing countries with nuclear energy option as a result of recent development of computational devices. The data needs have increased world-wide for non-energy applications.

In addition the SC finds that:

- To accomplish above activities a core of experienced long-term staff is needed.
- It is essential to continue the NDS policy of not charging for its services or distributions.
- NDS must play a key role with regard to international nuclear data standards and reference data.

Executive Summary Report of Subcommittee 2

Nuclear Data Needs for Applied Technologies

Priorities for Nuclear Data Section Activities

The Subcommittee discussed the priorities for Nuclear Data Section activities and recommended strongly that the highest priority is to concentrate on providing nuclear information services. Development of nuclear data through CRPs and meetings is the next in priority.

Important Conclusions and Recommendations

Keeping in view the continuing and changing trends in nuclear data needs (in nuclear reactor safety and safeguards, nuclear transmutation for waste reduction, accelerator shielding, fusion, spallation neutron sources, medical applications, radioanalytics including AMS, medium energy data, as well as more fundamentally related topics like astrophysics and cosmology) in Member States and the limited resources available to the Nuclear Data Section, the Subcommittee recommends the following:

- (1) Nuclear Data Section activities concerning general purpose files CINDA and EXFOR should be strongly supported.
- (2) The completed FENDL-1 should be available on-line.
- (3) Evaluation co-operation and co-ordination activities should continue.
- (4) In view of the progress of the on-going CRPs, these should be carried to completion.
- (5) The following CRPs should be initiated:
 - (i) Charged-particle data for medical radioisotope production - **1995**
 - (ii) Fission product yield data relevant to waste handling - **1997**
 - (iii) Activation cross sections for fusion technology - **1997**
 - (iv) Reference input parameters for nuclear model calculations (Phase II) - **1998**
 - (v) Photonuclear data - **1996**
- (6) The Subcommittee proposes meetings on the following topics:
 - (i) Nuclear data for radiation therapy - **1996**
 - (ii) Assessment of needs and scope of a CRP on fission and capture cross sections
 - (iii) Nuclear data for techniques in elemental analysis
- (7) The Subcommittee emphasizes the importance of continuing co-operation with the NEANSC. Duplication should be avoided.

Executive Summary Report of Subcommittee 3

Nuclear Data Technology Transfer

Rationale

The Subcommittee was charged to discuss and recommend programs towards nuclear data related manpower training and technology transfer to the developing countries to enhance their capability for both energy and non-energy type applications.

Important Conclusions and Recommendations

- The NDS should encourage nuclear data activities in the developing countries also through the award of individual research contracts to accomplish some of its identified thrust area programs particularly in the newly emerging areas.
- The proposal on the Interregional Training Course (ITC) on Nuclear Data Evaluation Methodology at Beijing in 1997 be finally approved by the Agency.
- A proper mechanism within the Agency should be found to organize one training course every two years in the field pertaining to nuclear data with emphasis on the emerging areas.
- NDS should continue attachment of fellows from developing countries to NDS and/or to scientists in developed countries working in nuclear data related projects.
- NDS should continue its association and involvement in the ICTP courses.
- Data processing activities in the NDS need to be reinforced.

Executive Summary Report of Subcommittee 4

The INDC Standards Sub-Committee

1. The IAEA Role in Nuclear Data Standards

- The majority of basic and applied nuclear data measurements for various nuclear processes are made relative to reference standards. Collection of these data, and the associated documentation, is herein referred to as a standards library. Therefore, the quality of all other measured data depends on the quality of the standards. It is essential that these standards are well defined, clearly referenceable, easily available and internationally accepted.
- The IAEA, being an international organization promoting development in nuclear energy and other related applied nuclear fields, is the appropriate body to give an international acceptance, recognition and dissemination of a nuclear reference standards library.
- The subcommittee recognizes that for the technical input to the standards library the correspondence with the NEA/NSC, in particular the newly formed Working Party on Experimental Activities, is essential.

2. Conclusions and Recommendations

To fulfill the demands on a useful nuclear reference standards library, it is essential that it contains the best and most modern information available. To that end the subcommittee has appointed responsible reviewers for each entry of the library.

- The Nuclear Data Section should co-ordinate the work on maintaining and updating the standards library.
- For those cases where considerable updates are needed, the Nuclear Data Section should organize a consultants' meeting with the responsible reviewers during 1996.
- During the consultants' meeting, the need for a CRP on New High-energy Standards should be considered.

To facilitate the international distributions and recognition of the nuclear reference standards library,

- The Nuclear Data Section should make the library available as an on-line service.

Furthermore,

- The Nuclear Data Section should, in due time, investigate the possibility of publishing the updated and revised version of the library in a refereed journal ("Atomic Data and Nuclear Data Tables").