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International Atomic Energy Agency

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INDC INTERNATIONAL NUCLEAR DATA COMMITTEE

CHAIRMAN'S REPORT ON THE INDC FOR 1974-1976

by

W. Gemmell

AAEC Research Establishment
Sutherland, Australia

June 1977

IAEA NUCLEAR DATA SECTION, KÄRNTNER RING 11, A-1010 VIENNA

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International Nuclear Data Committee 1974-76

Two meetings of INDC were held during the period of review, one at Sydney in October 1974 and the other in Vienna in October 1975. Discussions ranged from charged particle, nuclear structure and decay, and atomic and molecular data for fusion, to more traditional topics. The lively argument on many of the topics was welcomed, indicating that the future direction of nuclear data work is a real issue. It has emphasised yet again the role of IAEA in fostering cooperation in a field where no one member state can hope to be entirely self-sufficient.

Neutron Data

The provision of accurate neutron data for nuclear power reactors is still seen as the most important task for the IAEA. The exchange of experimentally measured microscopic neutron data has been proceeding satisfactorily for many years now, often through the aegis of the IAEA. The situation with respect to the exchange of evaluated neutron data has been less satisfactory, as pointed out by the previous Chairmen. It is pleasing to report that exchange of evaluated data between member states is gradually being accomplished through the agency of NDS/INDC.

The value of evaluated data is not sufficiently recognised outside the data community. Many data requests would probably be best met by a critical evaluation of previous work, rather than a new measurement. However, evaluation is a skilled task requiring extensive experience and the application of many skills. The exchange of evaluated data would be stimulated by a greater feedback to the evaluator of information generated from its use. Small nations (and perhaps some not so small) would be willing to contribute here, but they often lack the resources and skilled personnel. Possibly a role exists for IAEA to sponsor scientists from these member states to data centres active in evaluation work. This would probably be more productive than generating new experimental data.

The overlap between the work done by INDC and NEANDC technical sub-committees dealing with standards and discrepancies in important nuclear data has been obvious for some time. The approach by NEANDC members to form joint technical sub-committees working on a common data base was welcomed by INDC. This has allowed INDC, on a trial basis, to restructure its meetings at 18 month intervals. The success of this less frequent meeting schedule is yet to be determined.

The Committee continued to review the publication of CINDA and WRENDA. There was unanimous accord about the success of CINDA. The discussion on WRENDA clarified its purpose, and its continuation was agreed. The cost of publishing these documents was scrutinised and sensible suggestions for financial economies proposed.

New Data Activities

The previous Chairman indicated that INDC had decided to investigate nuclear data from an applications (user) viewpoint, rather than the discipline (provider) viewpoint. We have continued with this approach, believing that unless the user requirements are being satisfied, the reasons for its existence will disappear. The provision of useful data is the 'bread and butter' of any data centre and the existence of potential applications must be kept in mind. Circumstances are changing and the data centre community must change with them. The establishment of policy sub-committees on Energy and Non-Energy Applications was the outcome of such a view.

Discussions on Energy and Non-Energy Applications have been extensive and protracted, indicating a wide variety of views on the future direction of nuclear data. I believe this is to be welcomed, being in marked contrast to earlier years when all were agreed on the development of neutron data needs for reactors. Many entrenched views have been questioned and, I trust, more divergent or dissident views will be heard in the future, for the purpose of the Committee is to see that these views are heard when making IAEA policy.

The Committee has discussed IAEA involvement in charged particle, nuclear structure and decay, radioisotope and atomic and molecular data, the latter particularly for fusion. All have considerable scientific merit. However, the Committee was left unconvinced that detailed compilations, improved data accuracy, or the potential magnitude of the application justified a major IAEA effort. It may well be that the future will show otherwise, but the INDC view was that most of these activities could only be supported with a low priority. The Committee found atomic and molecular data for fusion the exception and sees the possibility of a major role in this area for IAEA.

We have already advised you of the Committee's views on this matter and have proceeded to set up a joint sub-committee with IFRC to review IAEA's atomic and molecular data program.

Nuclear Data Section

The Committee examined the structure and staff resources of the Nuclear Data Section in relation to its workload. It is quite clear that NDS efficiency suffers from unfilled vacancies and the short term nature of the appointments. The Committee supported the case for extra staff to handle the increased data requests coming from member states, and concluded that an atomic and molecular data commitment should be staffed separately. Members were concerned that NDS might be spreading its resources too widely and that this could possibly result in a fall-off in its efficiency.

Following up its successful meeting on Fission Product Data in 1973, NDS sponsored a panel meeting on a very topical subject, 'Transactinide Nuclear Data'. These two meetings brought together a large amount of data relevant to nuclear power which would otherwise have been difficult to assemble. Equally successful was the Committee's meeting on the Use of Nuclear Theory in Neutron Nuclear Data Evaluation held in December 1975 at ICTP Trieste. The Nuclear Data Section sponsors several small consultants and advisory group meetings each year and they form an extremely effective role in publicising expert views on potentially important topics.

Much of NDS work is concerned with the exchange of information through such devices as CINDA, WRENDA and EXFOR. I am happy to report that NDS does this efficiently and effectively.

The Future

A major commitment of manpower and resources by the IAEA to atomic and molecular data for fusion, together with the continuation of its role in neutron data for nuclear power, will require a major increase in funding and the setting of priorities for work on data for new applications in which IAEA is currently engaged. The specific role for IAEA in a changing scene and the relevance of its data activities to tomorrow's problems, will continue to be major tasks for INDC.

W. Gemmell

Chairman of the INDC
for the period 1974-76