Practical experience in the application of Quality Control in water-reactor fuel fabrication

by A. Manin*

A hundred persons from twenty-three countries participated in a seminar on this theme, held in Karlsruhe, Federal Republic of Germany, from 12 to 16 March 1984. The seminar was organized by the IAEA in co-operation with the Kernforschungszentrum Karlsruhe GmbH. Nine invited speakers presented lectures on selected aspects of Quality Control and Quality Assurance procedures and results. Twenty-three contributed papers were presented by the participants.

Agency seminars are intended to have a "didactic" character; in this case participants from industrialized countries shared their experience of the introduction of Quality Assurance (QA) and Quality Control (QC) with others.

The main conclusion drawn from a panel discussion at the end of the week's presentations was that in some plants the implementation of a stringent QA programme has so much enhanced the quality of the final product that at several process stages the product rejection rate has fallen to zero. This is an extremely important point: QA procedures have in effect paid for themselves. Some lecturers suggested that the time has come to review Quality Control plans and replace those tests and analyses which never reveal negative results by the Quality Assurance procedure. It should be ensured that the work is performed in strict conformity with the flowsheet.

The conclusions and recommendations drawn from the meeting are that there is not much that can be done to improve and develop Quality Assurance programmes in modern fabrication plants, given the low final product rejection rate. However, new analytical methods should be developed, and research into more accurate, more efficient and less costly methods undertaken.

Traditional QA procedures will continue to play an important rôle for small-scale manufacturers and in the development of advanced, mixed oxide, and research reactor fuels. It may be hoped that in such work QA will yield the same results as have already been achieved in larger-scale industry: improvement in quality to the point of diminishing returns.

As a final recommendation it was proposed to update the topics of the meeting, with emphasis on the feedback of QA results to fabrication processes: the development of administrative procedures and regulatory aspects should be left to safety specialists.

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