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quality assurance program requirements for research reactors

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American National Standard
Quality Assurance Program Requirements for Research Reactors

Secretariat
American Nuclear Society

Prepared by the
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Working Group ANS-15.8

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American National Standard

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Foreword

(This Foreword is not part of American National Standard Quality Assurance Program Requirements for Research Reactors, N402-1976/ANS-15.8)

The American Nuclear Society Standards Secretariat established Subcommittee ANS-15 in the fall of 1970 with the task of preparing a standard for the operation of research reactors. In January 1972 this charter was expanded to the multiple tasks of preparing all standards for research reactors. To implement this enlarged responsibility, a number of Subcommittee Work Groups have been established to develop standards for consideration and complementary action by Subcommittee ANS-15. ANS-15.8 is one of these groups.

Working Group ANS-15.8 was assigned the task of developing a draft standard for quality assurance program requirements in December, 1972. The proposed standard was under development by ANS-15.8 for over two years. It has been reviewed and revised three times by Subcommittee ANS-15 in addition to several working group sessions. The membership of Working Group ANS-15.8 is as follows:

A. C. Ellingson (Chairman), *Sandia Laboratories*
J. R. Bohannon, *North Carolina State University*
J. A. Cox, *Oak Ridge National Laboratory*
J. L. Meem, *University of Virginia*

In this process of creating standards against the background of established and varied practices in many operating facilities, it is important to consider that:

(1) It is not intended that the standard be used as a demand model for backfitting purposes.
(2) It should be a vital aid for the new owner-agency.
(3) It should be helpful for the facility undergoing change/modification.
(4) Its thoughtful use by industry should ease the burden of regulatory agencies.

We affirm, further, that the use of any standard of performance, conduct or excellence is volitional. The decision to use a standard is a management matter, presumably on technical advisement. The institutionalizing of a standard can and almost must be conditional; i.e., high probability exists that some exception or addition will compromise the absolute, unconditional application of a document which was composed to cross lines of functional and material discipline.

It is a management function to ameliorate or mitigate conditional matters. It is not the function of a standard to attempt to accommodate the many different management systems. Neither is its function to preempt management prerogatives.

With regard to this particular Standard, it must be noted that research reactors have two characteristics which affect the type of quality assurance program that may be applied to them, when compared to power reactors. First, the reliability of most of the parts used in a research reactor is not relevant to the safety and health of the public, since failure of the item shuts the system down and nothing else happens. Secondly, the typical research reactor operates on a small budget, with its continued existence dependent upon maintaining a low cost of operation. Because of these characteristics, the quality assurance program applied to research reactors must be limited to safety-related items, and must be less complex than other quality assurance programs, if it is to be economically feasible. It is the intent of this Standard to state the requirements for such a program.

For those not yet exposed to vigorous quality assurance requirements, it is difficult to grasp the value of total documentation. Although documentation is not the totality of a quality assurance program, it is the key to an adequate program for research reactors, and is therefore stressed in this Standard. On the other hand, much of the documentation required by a quality assurance program already exists for an operating research reactor, and very little additional documentation is needed when the quality assurance program is initiated.

Correct interpretation of a standard is very important, and a careful and comprehensive reading of this Standard before application to a specific reactor is highly recommended. Two comments are presented as aids to interpretation:

(1) It is recognized that it is neither necessary nor possible to apply the same degree of control to all items in a reactor. Where this Standard uses words such as "appropriate" or "as necessary" these are to be interpreted as meaning such variation in the degree of control.

(2) It is not intended that this Standard require modification of existing license requirements and should not be so interpreted. For example, although proper calibration of measuring and test equipment is required under this Standard, it is not intended that calibration procedures stricter than those specified in the technical specifications be imposed.

In the context of the body of standards generated or in process for research reactors, this Standard is nominally but not totally the vehicle for assurance of quality. Operations and safety committee functions are covered elsewhere, as are record keeping practices and other matters related to the functional assurance of a quality operation which meets all the requirements and conditions for the safety of the public.

The definition of research reactor used in this Standard and all other ANS-15 standards is being revised. Until such revision is complete, the present definition will apply.

The family of standards and task assignments includes:

ANS-15.1 (N378-1974)	Development of Technical Specifications for Research Reactors
ANS-15.2 (N398-1974)	Quality Control for Plate-Type Uranium-Aluminum Fuel Elements
ANS-15.3 (N399-1974)	Records and Reports for Research Reactors
ANS15.4 (N380)	Standard for Selection and Training of Personnel for Research Reactors
ANS-15.6 (N401-1974)	Review of Experiments for Research Reactors
ANS-15.7 (N379)	Siting for Research Reactors
ANS15.8 (N402-1976)	Quality Assurance Program Requirements for Research Reactors
ANS-15.10 (N550)	Decommissioning of Research Reactors
ANS-15.11 (N628)	Radiological Control at Research Reactor Facilities
ANS-15.12 (N647)	Design Objectives for and Monitoring of Systems Controlling Research Reactor Effluents
ANS-15.14 (N700)	Standard for Physical Security of Research Reactors
ANS-15.15 (N701)	Criteria for the Reactor Safety Systems of Research Reactors
ANS-15.16 (N17.2)	Emergency Planning for Research Reactors

Subcommittee ANS-15, Operation of Research Reactors, of the American Nuclear Society Standards Committee had the following members at the time it processed and approved this Standard:

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R. R. Walston, *U.S. Nuclear Regulatory Commission*
W. L. Whittemore, *General Atomic*

The American National Standards Committee N17, Research Reactors, Reactor Physics, and Radiation Shielding, which reviewed and approved this Standard in 1976 had the following membership:

W. L. Whittemore, Chairman
R. S. Carter, Secretary

Organization Represented	*Name of Representative*
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American Institute of Chemical Engineers	R. Duffy
American Nuclear Society	W. L. Whittemore
American Physical Society	W. W. Havens, Jr. H. Goldstein (Alt.)
American Public Health Association	C. G. Amato W. A. Holt (Alt.)
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