ANS-STD. 1-1967

ANS STANDARD

A Code of Good Practices for the Performance of Critical Experiments

Approved August 18, 1967
AMERICAN NUCLEAR SOCIETY
244 E. Ogden Avenue
Hinsdale, Illinois 60521

Published by
AMERICAN NUCLEAR SOCIETY
244 E. Ogden Avenue
Hinsdale, Illinois 60521

Price $1.50

It is the policy and practice of the Standards Committee of the American Nuclear Society through its subcommittees to formulate and promulgate proposed standards for the nuclear industry. These standards were prepared on the consensus principle and are based on the experience and knowledge available at the time. These standards are intended as guides to aid the manufacturer, the consumer, and the general public. The existence of a standard does not in any respect preclude any party from manufacturing, selling, or using products, processes, or procedures not conforming to the standard. These standards are subject to periodic review and reffirmation or revision. The existence of these standards do not relieve their users from the requirement that they exercise good judgment in their application, and that they provide themselves with technical competence commensurate to their activities, nor does compliance with ANS Standards assure acceptability to federal, state, or local authorities.

Printed in USA

STANDARD

ANS-STD. 1-1967

A Code of Good Practices for the Performance of Critical Experiments

Prepared by Subcommittee 1
American Nuclear Society Standards Committee
Approved by the Board of Directors
August 18, 1967

FOREWORD

(This Foreword is not a part of the standard.)

Critical experiments are an essential part of nuclear research and development. They yield information valuable for the design of nuclear reactors, for the specification of processes and operations with fissionable materials, and for furthering fundamental scientific knowledge.

Because of this diversity of purpose and the exploratory nature of critical experiments, their conduct differs from routine reactor operation. In many cases, for example, it is not possible to predetermine the exact value of operational controls or of shutdown devices, for to obtain the required information is the purpose of the experiment. Good practice dictates a minimum of perturbation extraneous to the equipment necessary to the objective of the experiment. Accordingly, assemblies for this purpose are often equipped with control and safety devices quite different from those in reactors designed to produce power. The information demanded from critical experiments requires great latitude in both the equipment and the operational practices to allow the necessarily frequent and often extensive changes in the assembly configuration.

These requirements result in a higher probability of an accidental nuclear excursion than could be tolerated for reactors. This greater probability is made acceptable by the absence of the large fission-product inventory and large internal energy that characterize reactors which have produced power, so effective radiation protection can be provided in a properly designed facility by simple operating rules.

This Code contains safety criteria and practices that have evolved and been tested during more than two decades of critical experimentation. It was prepared by Subcommittee ANS-1, Performance of Critical Experiments, of the American Nuclear Society Standards Committee. At the time of approval by Subcommittee ANS-1 on November 1, 1966, the membership of the Subcommittee was the following:

Dixon Callihan, Chairman, Oak Ridge National Laboratory
James R. Brown, General Atomic
E. D. Clayton, Pacific Northwest Laboratory
T. C. Engelder, Babcock & Wilcox Company
Don F. Hanlen, Westinghouse Atomic Power Division
H. J. C. Kouts, Brookhaven National Laboratory
R. G. Luce, Knolls Atomic Power Laboratory
H. C. Paxton, Los Alamos Scientific Laboratory
J. W. Ray, Battelle Memorial Institute
W. C. Redman, Argonne National Laboratory

Comments and questions concerning this standard should be addressed to AMERICAN NUCLEAR SOCIETY, 244 E. Ogden Avenue, Hinsdale, Illinois.