ANS 10.2-1971

American Nuclear Society Standard

RECOMMENDED PROGRAMMING PRACTICES TO FACILITATE THE INTERCHANGE OF DIGITAL COMPUTER PROGRAMS

A PUBLICATION OF THE
AMERICAN NUCLEAR SOCIETY
244 E. OGDEN AVENUE, HINSDALE, ILLINOIS 60521

AMERICAN NUCLEAR SOCIETY
STANDARD

ANS 10.2-1971

Recommended Programming Practices to Facilitate the Interchange of Digital Computer Programs

Prepared by Subcommittee 10
American Nuclear Society Standards Committee
Approved by the ANS President
April, 1971

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

Price $7.50

Printed in USA

STATEMENT OF THE POLICY AND PRACTICE OF THE ANS STANDARDS COMMITTEE

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. This standard was prepared on the consensus principle and is based on the experience and knowledge available at the time. This standard is intended as a guide 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. This standard is subject to periodic review and reaffirmation or revision. The existence of this standard does not relieve its user from the requirement that he exercise good judgment in its application, and that he provide himself with technical competence commensurate to his activities, nor does compliance with ANS Standards assure acceptability to federal, state, or local authorities.

FOREWORD

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

This document was prepared by the ANS-10 Subcommittee of the Standards Committee of the American Nuclear Society, sponsored by the Mathematics and Computation Division of the Society. Since its inception, the Mathematics and Computation Division has encouraged and promoted the interchange of digital computer programs (codes) within the nuclear industry. The practices recommended herein are based on experience in working with programs for neutronics, shielding, and engineering calculations in this industry.

This standard is directed at the computer-independent aspects of digital computer programs. That is, the program developer is asked to accept the fact that many of the difficulties associated with interchange and conversion from one computer model to another can be avoided. Great expense, waste of effort and loss of computing capability have occurred because the practices recommended have not been assigned sufficient importance. This is true not only in program interchange between installations, but also in program modification and conversion within the originating installation. Some of the recommendations herein cover quite elementary practices normally followed, yet often overlooked. They can be put into practice with only a reasonable amount of additional effort over that normally expended in developing major computer programs.

These recommendations would have to be supplemented to cover local requirements for efficient program development to take into account the physical nature and operation of a particular computer and related programs.

Great diversity has come with the rapid advance in computing technology. Several quite different models of computers are in wide use. Several "higher-level" programming languages are in use, such as FORTRAN, ALGOL, and PL/1. These programming languages are interpreted by a variety of compilers. To meet the needs for greater flexibility, improved efficiency, and easier use, the programming languages continue to be extended which leads to incompatibilities and difficulties in conversion.

While it is not recommended that FORTRAN be accepted as the standard programming language, it is recognized as the **de facto** standard for much scientific and engineering computation. Thus many of the practices recommended herein are directed at FORTRAN programming. Nevertheless, the development of and experimentation with more flexible higher-level languages is encouraged. This document will be modified to acknowledge new de facto standards as they evolve. The need for compatibility within the advancing technology is recognized and effort toward satisfying this need is encouraged.

The members of the ANS-10 Committee are:

M. K. Butler	Argonne National Laboratory
W. R. Cadwell	Bettis Atomic Power Laboratory
J. E. Gratteau	Gulf General Atomic
K. F. Hansen	Massachusetts Institute of Technology
B. F. Maskewitz	Oak Ridge National Laboratory
J. E. Olhoeft	Westinghouse Atomic Power Divisions
A. L. Rago	International Business Machines Corp.
D. R. Vondy, Chairman	Oak Ridge National Laboratory

Many other individuals have helped in this effort. Substantial contribution was made by R. A. Blaine of the International Business Machines Corporation, past Chairman of the ANS-10 Subcommittee. J. R. Kasdorf of Westinghouse Atomic Power Divisions also participated.