② **OAK RIDGE NATIONAL LABORATORY**

operated by
UNION CARBIDE CORPORATION

for the
U.S. ATOMIC ENERGY COMMISSION

MASTER

① **COMPILATION OF NATIONAL AND INTERNATIONAL
NUCLEAR STANDARDS
(Excluding U.S. Activities)**

② 3rd Edition, 1967

Wm. B. Cottrell, Chairman
NSB Special Subcommittee

United States of America Standards Institute

NUCLEAR SAFETY INFORMATION CENTER

NSIC

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

NUCLEAR SAFETY

A QUARTERLY REVIEW JOURNAL PREPARED BY NSIC

Nuclear Safety covers significant developments in the field of nuclear safety.

The scope is limited to topics relevant to the analysis and control of hazards associated with nuclear reactors, operations involving fissionable materials, and the products of nuclear fission.

Primary emphasis is on safety in reactor design, construction, and operation; however, safety considerations in reactor fuel fabrication, spent-fuel processing, nuclear waste disposal, handling of radioisotopes, and related operations are also treated.

Qualified authors are invited to submit interpretive articles, which will be reviewed for technical accuracy and pertinency. Authors will be advised as soon as possible of acceptance or suggested changes. Send inquiries or 3 copies of manuscripts (with the draftsman's original line drawings plus 2 copies, and with continuous-tone glossy prints of photographs plus 2 copies) to J. P. Blakely, Oak Ridge National Laboratory, P. O. Box Y, Oak Ridge, Tennessee 37830.

Nuclear Safety is prepared by the Nuclear Safety Information Center at Oak Ridge National Laboratory for the U.S. Atomic Energy Commission, Division of Technical Information. For subscriptions, address Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. The subscription rate is \$3.00 per year. Below is an order blank for your convenience.

U.S. GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D.C. 20402

OFFICIAL BUSINESS
RETURN AFTER 5 DAYS

Name _____
Address _____
City _____ State _____ Zip _____

POSTAGE AND FEES PAID
U.S. GOVERNMENT PRINTING OFFICE

----- TO INSURE PROMPT, ACCURATE SHIPMENT, PLEASE PRINT OR TYPE CORRECT ADDRESS ON MAILING LABEL ABOVE -----

MAIL ORDER FORM To:

Superintendent of Documents, Government Printing Office, Washington, D.C., 20402

Enclosed find \$_____ (check, money order, or Supt. of Documents' coupons).

Please send me _____ annual subscriptions to Nuclear Safety
at \$3.00 per subscription.

Name _____
Address _____
City _____ State _____ Zip _____

Please charge these
publications to my Deposit
Account No. _____

FOR USE OF SUPT. DOCS.

Enclosed _____
To be mailed _____
later _____
Subscription _____
Refund _____
Coupon refund _____
Postage _____

USATC Division of Technical Information Extension, Oak Ridge, Tennessee

Contract No. W-7405-eng-26

Nuclear Safety Information Center

©
COMPILATION OF NATIONAL AND INTERNATIONAL NUCLEAR STANDARDS
(Excluding U.S. Activities)

Wm. B. Cottrell, Chairman
NSB Special Subcommittee

United States of America Standards Institute

LEGAL NOTICE

This report was prepared as an account of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission:

A. Makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or

B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.

As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission, or employee of such contractor, to the extent that such employee or contractor of the Commission, or employee of such contractor prepares, disseminates, or provides access to, any information pursuant to his employment or contract with the Commission, or his employment with such contractor.

©
OCTOBER 1967

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee
Operated by
UNION CARBIDE CORPORATION
for the
U.S. ATOMIC ENERGY COMMISSION

PREFACE

The Nuclear Safety Information Center was established in March 1963 at the Oak Ridge National Laboratory under the sponsorship of the U.S. Atomic Energy Commission to serve as a focal point for the collection, storage, evaluation, and dissemination of nuclear safety information. A system of keywords is used to index the information catalogued by the Center. The title, author, installation, abstract and keywords for each document reviewed is recorded on magnetic tape at the central computer facility in Oak Ridge. The references are catalogued according to the following categories:

1. General Safety Criteria
2. Siting of Nuclear Facilities
3. Transportation and Handling of Radioactive Materials
4. Aerospace Safety
5. Accident Analysis
6. Reactor Transients, Kinetics, and Stability
7. Fission Product Release, Transport, and Removal
8. Sources of Energy Release Under Accident Conditions
9. Nuclear Instrumentation, Control, and Safety Systems
10. Electrical Power Systems
11. Containment of Nuclear Facilities
12. Plant Safety Features
13. Radiochemical Plant Safety
14. Radionuclide Release and Movement in the Environment
15. Environmental Surveys, Monitoring and Radiation Exposure of Man
16. Meteorological Considerations
17. Operational Safety and Experience
18. Safety Analysis and Design Reports
19. Bibliographies

Computer programs have been developed which enable NSIC to (1) produce a quarterly indexed bibliography of its accessions (issued with ORNL-NSIC report numbers); (2) operate a routine program of Selective Dissemination of Information (SDI) to individuals according to their particular profile of interest and (3) make retrospective searches of the references on the tapes.

Other services of the Center include principally (1) preparation of state-of-the-art reports (issued with ORNL-NSIC report numbers); (2) preparation of the bimonthly technical progress review, Nuclear Safety; (3) answering technical inquiries as time is available, and (4) counsel and guidance on nuclear safety problems.

Services of the NSIC are available without charge to government agencies, research and educational institutions, and the nuclear industry. Under no circumstances do these services include furnishing copies of any documents (except NSIC reports) although all documents may be examined at the Center by qualified personnel. Inquiries concerning the capabilities and operation of the Center may be addressed to

J. R. Buchanan, Assistant Director
(Phone 615-483-8611, Ext. 3-7253)
Nuclear Safety Information Center
Oak Ridge National Laboratory
Post Office Box Y
Oak Ridge, Tennessee 37830

FOREWORD

Early in 1963 what was then the American Standards Association (ASA) Sectional Committee N6, Reactor Safety Standards, established the subcommittee N6-9 to maintain an indexed catalog of standards of interest to the nuclear industry for both the United States and foreign countries with principal emphasis on the former. In August of last year the ASA was reconstituted as the United States of America Standards Institute (USASI) and hence this report bears the sponsorship of that organization. The N6-9 Subcommittee was redesignated as "Special Committee of the Nuclear Standards Board."

In addition to compiling and maintaining the catalog of nuclear standards in the United States and those promulgated by international organizations and foreign countries, the subcommittee was also asked to direct the parent committee's attention to those areas in the U.S. in which there was duplication and to those which lacked coverage. In order to fulfill its designated function the subcommittee has first compiled and examined the United States nuclear standards, the results of which were compiled in a report issued August 1964. The subcommittee next undertook a similar survey of foreign nuclear standards, the results of which were reported in May 1965. Both reports have been revised annually since then. This is the third issue of the "Compilation of National and International Nuclear Standards."

Although the primary purpose of the subcommittee's activities is to maintain the aforementioned catalog, for the first time this report contains a brief description of most of the organizations involved. Readers interested in additional information of that nature are referred to the bibliography of this report and especially to the "Selected Bibliography of Radiation Protection Organizations" published in 1963 by the American Conference on Governmental Industrial Hygienists. Although that bibliography is primarily concerned with organizations in the U.S. the first of four sections of the report is devoted to international organizations. For European organizations the "Atomic Handbook, Vol. I, Europe" published by Morgan Brothers Ltd. is especially useful.

All national and international nuclear standards activities known to this committee, except for the U.S. work covered in ORNL-NSIC-30 are presented here in simple tabular form. The standards activities of all national organizations, technical societies, etc., as well as relevant regulations established by government agencies, are listed herein in alphabetical order by country in the first part of the report. It is noted that many of the so-called "Standard Activities" listed for the various countries are indeed legal regulations rather than voluntary standards. In some countries there are only the former. Such regulations are included here, however, because of their relevance to our interests. The atomic energy agencies of several other countries in addition to those listed in this report were contacted for information, but, where no reply was received, the country is omitted in the following listing. Comparable activities of international organizations are listed alphabetically in the second part of the report. Although

not indicated in this report, the standards activities of many countries are channeled into the activities of these international organizations both through their support of the organizations and through membership on the committees themselves.

The following compilation is generally self-explanatory, and where necessary or appropriate comments are made in the column titled "Remarks." The status of any given standards activity is described by one of four terms: Approved, Active, Inactive, or Withdrawn, where these terms have the following connotations:

- Approved - Approved as a standard by the sponsoring organization.
- Active - Work on the proposed standard is in progress (a draft may or may not exist).
- Inactive - Work on the proposed standard either not begun or begun and suspended. In the latter case the reason where known will be given.
- Withdrawn - A standard or standard project which was at one time approved but which has since been discontinued. The reason will be given where known.

While the subcommittee members have undertaken to personally contact all organizations and committees actively engaged in the generation of nuclear standards, the nature of the work is such that information is soon outdated and there are not infrequent changes in the standards-generating committees. Accordingly, all persons are encouraged to direct to the subcommittee's attention any errors or omissions in this report, the complete accuracy of which the subcommittee cannot guarantee. The subcommittee also wishes to express its appreciation to the many persons whose cooperation has made this compilation possible.

USASI NSB Special Subcommittee
Wm. B. Cottrell, Chairman

W. B. Allred, Stone & Webster Engineering
Company
R. C. DeYoung, U.S. Atomic Energy Commission
J. B. Godel, Brookhaven National Laboratory
M. Novick, Argonne National Laboratory
C. Roderick, Westinghouse Electric Corporation
J. C. Russ, General Electric Company
R. F. Shea, Consultant

THIS PAGE
WAS INTENTIONALLY
LEFT BLANK

CONTENTS

	<u>Page</u>
Preface	ii
Foreword	iv
 I. <u>National Nuclear Standards Activities (Excluding U.S.)</u>	
1. Australia	2
2. Austria	2
3. Belgium	2
A. Atomic Energy Commission	2
B. Department of Employment and Labor	2
C. Department of Public Health	2
4. Canada	4
A. Atomic Energy Control Board	4
B. Atomic Energy of Canada Limited	4
C. Canadian Standards Association	4
5. France	4
A. Commissariat à l'Energie Atomique	4
B. Association Française de Normalisation	6
C. Comité Electrotechnique Français	6
6. Germany	6
A. Ministry for Scientific Research	6
B. Institute for Reactor Safety	6
7. Hungary	8
8. India	8
9. Israel	8
A. Israel Atomic Energy Commission	8
B. Israël Nuclear Hazards Evaluation Committee	8
10. Italy	8

11.	Japan	10
	A. Ministry of International Trade and Industries	10
	B. Japan Atomic Energy Commission	10
	C. Science and Technology Agency	10
	D. Ministry of Transportation	12
12.	Netherlands	12
13.	Norway	12
14.	Pakistan	14
15.	Republic of South Africa	14
	A. Atomic Energy Board	14
	B. S. A. Bureau of Standards	14
	C. S. A. Railways and Harbours Administration	14
16.	Sweden	14
17.	United Kingdom	16
	A. British Standards Institution	16
	B. United Kingdom Atomic Energy Authority	16
	C. Central Electricity Generating Board	18
18.	Yugoslavia	18
II.	<u>Nuclear Standards Activities of International Organizations</u>	
1.	European Organization for Nuclear Research	20
2.	European Atomic Energy Community	20
3.	Intergovernmental Maritime Consultative Organization	22
4.	International Air Transport Association	22
5.	International Atomic Energy Agency	22
6.	International Commission on Radiological Protection	26
7.	International Commission on Radiation Units and Measurements	28
8.	International Electrotechnical Commission	32
	A. Technical Committee No. 45, Electrical Measuring Instruments Used in Connection with Ionizing Radiation	32
	B. Technical Committee No. 62, Medical X-ray Equipment	34

9. International Standards Organization	36
A. Technical Committee No. 12, Quantities, Units, Symbols, Conversion Factors and Conversion Proposals .	36
B. Technical Committee No. 85, Nuclear Energy	36
10. Iloyds	38
11. Organization for Economic Cooperation and Development; European Nuclear Energy Agency	38
12. United Nations	40
A. United Nations Scientific Committee on the Effects of Atomic Radiation	40
B. Food and Agriculture Organization	42
C. World Health Organization	42
D. World Meteorological Organization	44
E. International Labor Organization	44
13. Bureau Veritas	46
Bibliography	48

COMPILATION OF NATIONAL AND INTERNATIONAL NUCLEAR STANDARDS
(Excluding U.S. Activities)
3rd Edition, 1967

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
<p>1. <u>Australia</u> The AAEC is the official government agency responsible for atomic energy matters. The Commission, founded in 1952 as a result of the Atomic Energy Act, is a corporate and autonomous body, controlling its own service, and it functions under the direction of the Minister for National Development. The Australian AEC deals with the discovery, mining, and production of uranium, and conducts research at Lucas Heights, near Sydney. The AAEC is a member of the International Atomic Energy Agency and the Comprehensive Agreement for Cooperation with the United States and is located at 45 Beach Street, Coogee, New South Wales, Australia; Sir Philip Baxter, Chairman.</p>	Australian Atomic Energy Commission	Frank L. Bett Atomic Energy Attache Australian Embassy Washington, D. C.
<p>2. <u>Austria</u> Founded in 1956 following the first Geneva Conference on Peaceful Uses of Atomic Energy of 1955, the company acts as the national atomic energy organization for Austria. It is a private company with 51% of the shares being held by the Austrian government and 49% by private industry and utilities. The main objective of ACAE is to conduct basic and applied research in the peaceful uses of atomic energy, and its program includes the construction and operation of a low power training and research reactor, a prototype power reactor, a high power research reactor, and a materials testing reactor, with the latter two located at the Reactor Centre at Seibersdorf. In 1965, the number of people employed by ACAE was 450; its address is Lenaugasse 10, Vienna 8, Austria; Dr. Michael J. Hignatsberger, Technical Director.</p>	Austrian Committee for Atomic Energy	Dr. Michael Hignatsberger Executive Secretary Austrian Committee for Atomic Energy, Inc. Lenaugasse 10 Vienna 8, Austria
<p>3. <u>Belgium</u> The Commission is an official body established by Royal Decree in December 1950. It watches the progress of nuclear research, coordinates nuclear energy activities in Belgium, and promotes the use and application of nuclear knowledge. Its address is: Commissariat à l'Energie Atomique, 2 rue des Quatres-Bras, Brussels 4, Belgium; Jacques Errera, Director.</p>	<p>A. Atomic Energy Commission</p> <p>B. Department of Employment and Labor</p> <p>C. Department of Public Health</p>	<p>J. Errera, Commissioner for Atomic Energy 2 rue Quatre-Bras Brussels, Belgium</p> <p>1. Technical Inspection Dr. Vertongen 102 rue de la Loc Brussels 1, Belgium</p> <p>2. Medical Inspection Dr. Uytendhoeft 53 rue de la Loi Brussels, Belgium</p> <p>Minister of Public Health Dr. Halter 60, rue Ravenstein Brussels 4, Belgium</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) Activity of Radioactive Nuclides	Nat. Std. Division 28	Approved	1965	Those listed are the only ones currently bearing on the subject
2) Exposure to Electromagnetic Radiation	Nat. Std. Division 29	Approved	1965	

No Austrian standards, but subscribe to IAEA Standards; adopted for internal use by the IAEA Safety Standards

See listed groups below

1) General Rules for the Protection of the Professionally Exposed Personnel from the Dangers of Ionizing Radiation. (Technical)	Royal Decree	Approved	2-28-63	Royal Decree, i.e., law
2) General Rules for the Protection of the Professionally Exposed Personnel from the Dangers of Ionizing Radiation (Medical)	Royal Decree	Approved	2-28-63	Royal Decree, i.e., law
Protection of the Population and of the Environment	Royal Decree	Approved	2-28-63	Royal Decree, i.e., law

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
4. <u>Canada</u> <p>The AECEB, founded in 1946 by an Act of Parliament, is responsible for the regulatory matters relating to atomic energy development and application in Canada. The Board reports to Parliament through the chairman of the committee of the Privy Council on Scientific and Industrial Research. It is located at P.O. Box 1046, Ottawa, Canada; Dr. G. C. Laurence, President.</p> <p>The AECL is a government-owned corporation responsible for the national atomic energy research and development program. It was incorporated in 1952 under the Atomic Energy Control Act of 1946 to take over from the National Research Council the operation of the Chalk River Project. The main activities of AECL include (a) development of economic nuclear power, (b) scientific research and development in the atomic energy field, (c) the operation of nuclear reactors and (d) the production of various radioactive isotopes, such as Cobalt-60. The company reports to Parliament through the chairman of the Committee of the Privy Council on Scientific and Industrial Research. AECL is located at 150 Kent Street, Ottawa, Ontario; J. L. Gray, President.</p>	A. Atomic Energy Control Board	Mr. F. C. Boyd Atomic Energy Control Board P. O. Box 1046 Ottawa, Canada
	B. Atomic Energy of Canada Limited	Mr. Guest Hake Atomic Energy of Canada Limited Chalk River Nuclear Laboratories Chalk River, Canada
	C. Canadian Standards Association	F. A. Sweet Canadian Standards Association Ottawa, Canada
5. <u>France</u> <p>The CEA, created in 1945, is the primary French governmental organization which is responsible for the military and peaceful applications of atomic energy. Although the CEA is a public authority, its management is subject to civil law, and it possesses financial and administrative independence. The Commissariat is under the direct authority of the Prime Minister. However, under the second five-year atomic energy plan, it was arranged that the CEA should cease to have sole responsibility for atomic energy in France, and now it is divided between the Commissariat and other government agencies and public corporations, led by Electricité de France. The Commissariat has four major research centers, not including the military centers, and it also conducts uranium exploration and mining, and manages a number of concentration and purification plants. The annual budget of the CEA is over \$400 million, and it employs over 25,500 people worldwide including about 7000 engaged in basic or applied research. The CEA is located at 29-33 rue de la Federation, Paris 15, France; Mr. Francis Perrin, High Commissioner.</p>	A. Commissariat à l'Energie Atomique (CEA)	M. Auzouy Inspector Generale, CEA 29 rue de la Federation 75 - Paris 15, France A. Rys Assistant to the Inspector General, CEA 29 rue de la Federation 75 - Paris 15, France M. Richez, Secretary Commission d'Etablissement des Methodes d'Analyses (CETAMA) Inspection Generale 29 rue de la Federation 75 - Paris 15, France J. Bourgeois Reactor Department CEN - Saclay Boite Postale No. 2 91-Gif/Yvette, France

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
Atomic Energy Control Act	RSC 1952, Amended 1953-4, 1960	Approved	1960	Not actively proposing any nuclear standards at this time, but, in addition to the Atomic Energy Control Act employ appropriate standards of CSA, USASI, ICRP, NFPA, ASME, IAEA, etc.
None				Use various standards generated by societies, Dept. of Labor, Dept. of Health, etc.
				Not actively preparing any nuclear standards at this time
See listed groups				This group has the responsibility for all CEA Nuclear Standards
1) Standardization of the Color Coding of Pipes	I.G. No. 1	Approved	11-63	
2) Addendum to I.G. No. 1	I.G. No. 2	Approved	7-1-64	
3) Standards of the Sound Safety Signals at Nuclear Centers	I.G. No. 3	Approved	7-1-64	
4) Standards of the Safety Signals for Control Boards	I.G. No. 4	Approved	7-1-64	
5) Standardization of Identification of Packing Cases for Plutonium, Uranium and Thorium	I.G. No. 5	Approved	10-64	
6) Standardization of the Visual Signal Panels	I.G. No. 7	Approved	9-65	
1) Collection of Analytical Methods No. 1-100		Approved	1963	Sold by: Presses Universitaires de France, 18 Bd St Germain Paris 6, France
2) Collection of Analytical Methods No. 101-150		Approved	1964	
3) Collection of Analytical Methods No. 151-200		Active		To be completed soon
1) Standards for Reactor Safety		Active		

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
5. France	A. Commissariat à l'Energie Atomique (CEA), continued	M. Weill, Chairman Material de Controle Commission of Industrial Electronics, CEN Boite Postale No. 2 91 - Gif/Yvette, France
		M. Doireau, Head Department of General Electronics, CEA CEN - Saclay 29 rue de la Federation Paris 15, France
		P. Lecorche Subcommission for Criticality Commission for the Safety of Nuclear Facilities 29 rue de la Federation Paris 15, France
	B. Association Francaise de Normalisation (AFNOR)	M. de Chauvron Nuclear Problems Association Francaise de Normalisation 23 rue Notre-Dame des Victoires Paris 2, France
	C. Comite Electrotechnique Francais (CEF)	M. Ailleret, Chairman M. Cassassoles, Secretary Comite Electrotechnique Francais 54 Avenue Marceau Paris 8, France
6. <u>Germany</u>		
<p>The Ministry, founded in 1955, has no nuclear installations of its own, but is divided into four sections, the first dealing with legislation and economic matters and administration, the second with the promotion of scientific research, the third with nuclear research, engineering, and radiation protection, and the fourth with outer space research. It is located at Luisenstrasse 46, 532 Bad Godesberg, Germany; Dr. Gerhard Stoltenberg, Minister.</p> <p>The Institute for Reactor Safety, established in January 1965, is a non-profit organization, which is supported by the eleven Technical Inspection Agencies of the Federal Republic of Germany. Duties of the Institute include 1) the collection of reactor safety information, 2) cooperation with the Technical Inspection Agencies, the Ministry for Scientific Research, and the Safety Commission, 3) development of reactor safety criteria, 4) to keep a record of accidents in nuclear reactors and 5) development of standard procedures for testing reactor components.</p>	A. Ministry for Scientific Research	Mr. Pfaffelhuber Ministry for Scientific Research 532 Bad Godesberg Germany
	B. Institute for Reactor Safety	Dr. Otto A. Kellerman Chief Engineer Institute for Reactor Safety Der Technischen Überwachungs-Vereine e.v. 27 von Gönschenstrasse Aachen, Germany

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) General Specifications for Nuclear Reactor Instrumentation	MCH/MENT 1	Approved	1965	Second edition
	MCH/MENT 2	Approved	1964	
	MCH/MENT 3	Approved	1965	
	MCH/MENT 4	Approved	1965	
	MCH/MENT 5	Approved	1966	
1) Material Specifications for Electrical and Mechanical Interchangeability (RENATRAN)	RENATRAN	Approved	1964	Application of the system ESCNE-EUR-1831 to the CEA
2) Test Specifications for Stabilized Power Supplies, Proportional Amplifiers and Single Channel Pulse Height Analyzers		Approved	1963	
1) Criticality Code		Approved	1966	Being printed
2) Safety Standards for Fissile Material		Active		
				Represents France on ISO TC No. 85
				Represents France on IEC TC No. 45
Nuclear Energy Law		Approved	1964	Booklets No. 4 and 10 contain the most important rules and regulations of the law; additional information contained in "Handbook of Atomic Questions," p. 233-284, 1964.
		Active		One of the responsibilities of this organization is to coordinate and unify safety criteria which are used by the Technical Inspection Agencies (TUV) of the Federal Republic of Germany.

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
7. <u>Hungary</u>	Hungarian Government	Dr. Janos Bonta Ministry of Health Budapest, Hungary
8. <u>India</u> The Atomic Energy Commission is responsible for formulating and implementing the policy of the Department of Atomic Energy, and it operates the national center for research and development at Trombay. Within the limits of the budget provision approved by Parliament, the Commission is vested with full powers of the Government of India, both administrative and financial, for carrying out the work of the Department. At the Atomic Energy Establishment at Trombay, founded in 1957, facilities include a research and isotope production reactor, the Canada-India reactor, and a zero power reactor. The Department of Atomic Energy is located on Apollo Pier Road, Bombay, India; Mrs. Indira Gandhi, Minister in charge.	Department of Atomic Energy	S. R. Shroff, Deputy Secretary Department of Atomic Energy Apollo Pier Road Bombay 1, India
9. <u>Israel</u> The Commission, established in 1952, represents the Government in atomic affairs at the national and international level. Research is conducted chiefly at the Soreq Research Establishment in theoretical and experimental physics, radiation chemistry, nuclear biology and other areas using the IRR-1 swimming pool reactor. Other features include the Israel Radioisotope Training Center and the Hazard Evaluation Committee. The Israel AEC is located at P.O. Box 7056, Hakirya, Tel-Aviv, Israel; Dr. Ernst D. Bergmann, Chairman	A. Israel Atomic Energy Commission B. Israel Nuclear Hazards Evaluation Committee	Professor E. D. Bergmann Israel Atomic Energy Commission Tel Aviv, Israel Dr. Jakob Tadmor, Coordinator Israel Nuclear Hazards Evaluation Committee Soreq Research Establishment Yavne, Israel
10. <u>Italy</u> CNEN was founded in August 1960 to succeed the National Committee for Nuclear Research (CNRN), which was set up in 1952. It oversees the tasks of pure and applied research, and must maintain technical control over industrial nuclear power plants which are being built in increasing numbers. CNEN promotes and encourages the development of industrial applications of nuclear energy, and cooperates internationally. Also, the Committee prospects for uranium, undertakes research into the production of nuclear materials, constructs prototype power reactors, and develops the applications of nuclear energy to agriculture and medicine at its research centers at Frascati, Casaccia, and Bologna. CNEN employs a staff of about 1500 at Via Belisario 15, Rome, Italy; Emilio Colombo, President.	Comitato Nazionale per L'Energia Nucleare	Dr. Guido Botta Director, Information Service Comitato Nazionale per L'Energia Nucleare via Belisario 15 Roma, Italy

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
Radiation Protection Standards	1964 Decrees			Covers educational requirements and specialized training of workers, medical examinations, film dosimetry, handling of radioactive wastes
1) Atomic Energy Act		Approved	1962	This Act permits establishment of rules, regulations and codes concerning radiation safety; see following two items
2) Radiation Protection Regulations		Active	1966	Awaiting promulgation under the Atomic Energy Act and expected to be in operation in the near future
3) Regulations for Transport of Radioactive Materials		Active	1966	To be promulgated in the near future under the Atomic Energy Act.
See listed group				
Guide for the Maximum Permissible Radiation Doses (MPD) to the Population		Active	1964	Uses standards of international organizations including IAEA, IEC and ISO

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
<p>11. <u>Japan</u></p> <p>The Ministry conducts nuclear research at the Government Industrial Research Institute, Nagoya, where topics of interest include irradiation studies for improvement of physical properties of plastics and semiconductors, industrial applications of radioactive isotopes, and radiochemistry. The institute is located at Hirate-Machi, Kita-ku, Nagoya, Japan; Kazuo Ketori, President.</p> <p>The Commission undertakes the planning, deliberation, and decision on matters related to the research, development and utilization of atomic energy, while the other governmental organizations concerned are responsible to administration for realization of these matters. The Japan AEC is located at 3-4 Kasumigaseki, Chiyoda-ku, Tokyo, Japan; Shokichi Uehara, Chairman</p> <p>The Science and Technology Agency is a division of the Ministry of International Trade and Industries.</p>	<p>A. Ministry of International Trade and Industries</p> <p>Aseismic Design Committee</p> <p>Materials Committee</p> <p>Inspection and Testing Committee</p> <p>B. Japan Atomic Energy Commission</p> <p>Committee on Reactor Safety Standards</p> <p>Committee on Nuclear Ship Safety Standards</p> <p>C. Science and Technology Agency</p>	<p>Tsutomu Inoue, Chief Nuclear Power Plant Section Bureau of Public Utilities Ministry of International Trade and Industries 1-3, Kasumigaseki, Chiyoda-ku Tokyo, Japan</p> <p>Professor Kenzaburo Takeyama Chairman, Aseismic Design Committee Toritsu University Tokyo, Japan</p> <p>Dr. Masyuki Kawasaki Chairman, Materials Committee Japan Atomic Energy Research Institute Ibaragi Pref., Japan</p> <p>Mr. Juzabura Terada, Chairman Inspection and Testing Committee Tokyo Electric Company Tokyo, Japan</p> <p>Mr. Hiroyuki Osawa, Chief Reactor Licensing and Regulation Section Atomic Energy Bureau Science and Technology Agency 3-4, Kasumigaseki Chiyoda-ku, Tokyo, Japan</p> <p>Same as above</p> <p>Mr. Hiroyuki Osawa, Chief Reactor Licensing and Regulation Section Atomic Energy Bureau Science and Technology Agency 3-4, Kasumigaseki, Chiyoda-ku Tokyo, Japan</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
Ministerial Ordinance Prescribing Technical Standards Covering Nuclear Power Plants (also see subcommittees)		Approved	1965	
		Active		Report not filed by end of 1965
		Active		Report not filed by end of 1965
		Active		Report not filed by end of 1965
1) Guidelines in Reactor Site Evaluation		Approved	5-27-64	Available
1) Maximum Permissible Doses and Concentrations of Radioisotopes		Approved	11-27-53	Available (in Japanese only)
2) Report on Reactor Site Evaluation		Approved	11-2-63	Available
3) Guide for the Evaluation of Nuclear Site Meteorology		Approved	11-11-63	Available (in Japanese only)
1) Guidelines in Nuclear Ship Operation		Active		Available
1) Atomic Energy Basic Law	Law No. 186	Approved	12-19-55	Available
2) Law for Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors	Law No. 166	Approved	6-10-57	Available
3) Executive Order for Law for Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors	Cabinet Order No. 324	Approved	11-21-57	Available (in Japanese only)
4) Regulation for the Establishment, Operation of Nuclear Reactors	Order of Prime Minister's Office No. 83	Approved	12-9-57	Available (in Japanese only)
5) Notification Concerning Determination of Maximum Permissible Doses, Concentration Pursuant to Provisions Given in Regulation	Notification No. 21	Approved	9-30-60	Available (in Japanese only)

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
<p>11. <u>Japan</u></p> <p>The Ministry conducts nuclear research at the Ship Research Institute, where topics of interest include the nuclear ship's form, dynamic characteristics and control of marine nuclear plant, prevention of vibration and oscillation of the marine reactor, shielding of the marine reactor, and the utilization of radio-isotopes for non-destructive testing. The Institute is located at 1-1057 Mejiro-cho, Toshima-ku, Tokyo, Japan; Hitoshi Okuda, Director.</p>	<p>D. Ministry of Transportation</p> <p>Committee on Nuclear Ship Safety (Ship Building Techniques Council, Ministry of Transportation)</p>	<p>Mr. Sadao Udagawa Superintendent for the Development of Nuclear Ships Ships Bureau Ministry of Transportation 1-2 Kasumigaseki Chiyoda-ku Tokyo, Japan</p> <p>Dr. Masao Yoshiki Professor of Naval Architecture University of Tokyo Bunkyo-ku, Tokyo, Japan</p>
	Nippon Kaiji Kyokai (Classification Society)	c/o Ministry of Transportation 1-2 Kasumigaseki, Chiyoda-ku Tokyo, Japan
<p>12. <u>Netherlands</u></p> <p>The Institute encompasses the standardization of terminology, definitions, units, symbols, and control equipment. In addition, it determines the qualifications for the operational staff of a nuclear power station. The address of the Institute is Nederlands Normalisatie-Instituut, Postbus 70, 20-22 Duinweg, The Hague, Netherlands; Professor Dr. M. Bogaardt, Chairman.</p>	A. Netherland Standardization Institute	<p>Netherlands Government The Hague, Netherlands</p> <p>Ir. J. M. Madsen, Director Nederlands Normalisatie-Instituut Polaweg 5, Rijswijk The Netherlands</p>
<p>13. <u>Norway</u></p> <p>The IFA, founded in 1948, is an independent foundation conducting research concerned with the application of atomic energy. The major research center is located at Kjeller, Norway, about 15 miles from Oslo. The Institutt has three research reactors in operation, and supporting research facilities which it operates on an annual budget of approximately \$4.7 million. Norway has bilateral agreements with the U.S.A. and Great Britain, and is a member of the International Atomic Energy Agency, The European Nuclear Energy Agency, the European Organization for Nuclear Research, Nordic Institute for Theoretical Atomic Physics, and European Atomic Energy Society. The address is Box 40, Kjeller, Norway; F. Lied, Chairman.</p>		<p>Mr. Gudbrand Jennsen Chairman, Safety Board Institutt for Atomenerg Kjeller, Norway</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
See Committees				
Nuclear Ship Safety Standard		Active	1964	Revised standard anticipated in 1966, standard to satisfy requirements of IC on SOLAS 1960
1) Working Group: Hull Construction				
2) Working Group: Ship Stability and Compartmentalization				
3) Working Group: Reactor				
4) Working Group: Equipment and Radiation Protection				
5) Working Group: Site Criteria				
Classification of Nuclear Ships		Approved	1964	Approved as preliminary guide: This organization corresponds to the American Bureau of Shipping
Regulation on Ionizing Radiation		Approved	5-65	A regulation
1) Rules for Portable Monitors	NEN-2384	Approved	6-62	The NNI have no nuclear safety standards in the sense of limits of radiation which has been prescribed by law, STB-116-1957
2) Rules for Pocket Electroscopes for Personnel Monitoring	NEN-2386			
3) Rules for Condenser Type Ionization Chambers and Accessory Electrometers for Personnel Monitoring	NEN-2387			
4) Rules for Film Badges for Personnel Monitoring	NEN-2388			
5) Determination of the Beta-radioactivity in Water	NEN-2395			
6) Determination of the Radioactivity in Water, Originating from Isotopes of the Alkaline Earth Metals	NEN-2396	Approved	6-62	
7) Glossary of Terms in Nuclear Science and Technology English - Netherlands	NEN-3069	Approved	6-62	
8) Glossary of Nuclear Science and Technology: and Supplement	NEN-3297 NEN-3297 Supp.	Active Active	6-65 4-66	
Recommendations for the Design and Safety of Nuclear Propelled Ships		Active		To be approved soon; no other official guide on nuclear safety

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
<p>14. <u>Pakistan</u> The Commission is responsible for organizing training and research centers in the field of nuclear science and technology. Research and training centers exist at Lahore and Dacca, and the Pakistan Institute of Nuclear Science and Technology has recently been built. Radioisotope techniques are in use in a number of newly established agricultural and medical centers. The commission is located at 30/A/VI, Pakistan Employees Cooperative Housing Society, P.O. Box No. 3112, Karachi 29, Pakistan; Dr. I. H. Usmani, Chairman.</p>	Pakistan Atomic Energy Commission	Inayat Husain, Secretary Pakistan Atomic Energy Commission P.O. Box No. 3112 Karachi, Pakistan
<p>15. <u>Republic of South Africa</u> The Board controls uranium production and marketing and radioisotope distribution, and conducts research into the extraction and processing of nuclear raw materials, nuclear power reactor systems, radioisotopes and their applications. South Africa is a founder member of the International Atomic Energy Agency. In 1957 a bilateral agreement was concluded with the United States of America for cooperation in the peaceful application of atomic energy. The address of the Atomic Energy Board is Private Bag 256, Pretoria, South Africa; The Honourable J. F. W. Haak, Chairman.</p>	<p>A. Atomic Energy Board</p> <p>B. S.A. Bureau of Standards</p> <p>C. S.A. Railways and Harbours Administration</p>	<p>A. R. Newby-Fraser, Head Liaison and Information Div. Atomic Energy Board Private Bag 256 Pretoria, Republic of South Africa</p>
<p>16. <u>Sweden</u> The Company, formed in 1947, is a semi-state company, with the Government holding four-sevenths of the shares and private and municipal interests the remaining part. The Government provides the company with money for investments and operating costs. The company is the central institution for applied atomic research work. It operates the Studsvik Research Center, has built the Agesta nuclear power plant, and is constructing the Marviken nuclear power plant and the Ranstad uranium mill. The staff of the company is about 1400, and its head office is located at Box 43041, Stockholm 43, Sweden; H. Brynielsson, Managing Director.</p>	Atomic Energy Company	Dr. Harry Brynielsson Managing Director Atomic Energy Company Lovholmsvagen 7 Drottning Kristinas Vag 47 Stockholm O, Sweden

Standards Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
The PAEC was established by the National Assembly in 1965.				
Atomic Energy Act (As amended)	35/1948	Approved	9-7-48	
Nuclear Installations (Licensing and Security) Act (As amended)	43/1963	Approved	5-8-63	
The Medical Use of Ionising Radiation	07/1949	Active		Being revised
The Safe Use of Radioisotopes for Industrial Purposes		Active		Draft
Official Railway Tariff Book on Dangerous and Hazardous Goods	Supplement No. 1	Approved	12-15-63	
1) Specifications for Maximum Permissible Exposures and Ingestion of Radioactive Material After an Accident		Approved		Abbreviated English version available
2) Radiation Protection Act	No. 110	Approved	3-14-58	A law
3) Act on Protection Measures in Case of Accidents in Nuclear Plants	No. 331	Approved	6-3-60	A law

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
17. <u>United Kingdom</u>		
The British Standards Institution is the UK national standards body responsible for the preparation of British Standards and coordination of British participation in international work, chiefly through ISO and IEC.	A. British Standards Institution	R. A. McKinstry Divisional Chief Technical Officer British Standards Institution British Standards House 2 Park Street London, W.1, England
The UKAEA incorporates five groups which for standardization purposes are organized on a largely decentralized basis. The Weapons and Research Groups each have separate standards organizations, which prepare and publish their own Group Standards, while the Production and Reactor Groups make use of the facilities of the Standards Section run by the Engineering Group. Standardization proposals of interest to all groups are reviewed by an Authority Standardization Committee, and where appropriate an Authority Standard is issued. Specialist intergroup committees are set up where necessary to prepare such Authority Standards.	B. United Kingdom Atomic Energy Authority	Sir Roger Makins, Chairman United Kingdom Atomic Energy Authority 11 Charles II Street London, S.W.1, England
	Health and Safety Branch	Mr. F. J. Neary Health and Safety Branch United Kingdom Atomic Energy Authority 11 Charles II Street London, S.W. 1, England

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) Specification for Direct-reading Personal Dosimeters	B.S. 3385	Approved	1961	
2) Glossary of Terms Used in Nuclear Science	B.S. 3455	Approved	1962	
3) Symbols for Ionizing Radiation	B.S. 3510	Approved	1962	
4) Specification for Gamma Radiography Sealed Sources	B.S. 3513	Approved	1962	
5) Principles of Criticality Safety	B.S. 3598 Part 1	Approved	1963	
6) Specification for Film Badges for Personnel Radiation Monitoring	B.S. 3664	Approved	1963	
7) Specification for Counting Trays (planchets)	B.S. 3775	Approved	1964	
8) Data on Shielding from Ionizing Radiation				
Part 1. Shielding from Radiation	66/2576	Active	3-66	
Part 2. Shielding from X-radiation	66/18981	Active	10-66	
9) Methods for the Assessment of Packaging for the Transport of Radioactive Materials				
Part 1. Materials Other than Large Radioactive Sources and Fissile Materials	B.S. 3895 Part 1	Approved	1965	
Part 2. Fissile Materials and Large Sources	66/18918	Active	9-66	
10) Recommendations for the Testing, Calibration and Processing of Radiation Monitoring Films	B.S. 3890	Approved	1965	
11) Specification for Gamma Radiography Exposure Containers	D65/13952	Active	12-65	
12) Method of Test for the Decontaminability of Surface Materials for Use in Radioactive Areas	66/18342	Active	7-66	
See listed groups				
1) Maximum Permissible Doses from External Radiation	Authority Code E.1.1	Approved	11-60	Most of these standards have been prepared by the Standards Section, Engineering Group, UKAEA, Risley, Warrington, Lancashire, England.
2) Maximum Permissible Doses from Inhaled and Ingested Radioactive Materials	Authority Code E.1.2	Approved	6-61	
3) Metal Labels for Radioactive Material Transit Containers	AESS 441 Part 1	Approved	7-61	
4) Identification Materials. Part 2. Adhesive Trefoil Symbol Label to Denote Radiation Hazards	AESS 441 Part 2	Approved	12-62	
5) Non-destructive Testing. Part 1. Radiography of Welds	AESS 6001 Part 1	Approved	7-63	
6) Testing of Packaging for the Transport of Radioactive Materials. Part 1. General Test Requirements, Climatic Tests, Mechanical Tests, Accident Tests (Type B Packaging Only)	AESS 6018 Part 1	Approved	3-64	
7) Standard Specification for Installation of Electrical Services in Buildings Containing Hazardous Materials	SB.ME5/3	Approved	7-59	Hazards material includes explosives and inflammable liquids or gases

I. NATIONAL NUCLEAR STANDARDS ACTIVITIES (Excluding U.S.)

Country	Standard Organization	Informant, Title, Address
17. United Kingdom	Health and Safety Branch, continued	Mr. F. J. Neary Health and Safety Branch United Kingdom Atomic Energy Authority 11 Charles II Street London, S.W.1, England
<p>The CEBG is a nationalized undertaking with a duty to maintain and develop a coordinated system of bulk supply in England and Wales. It is responsible for the design, construction and operation of power stations and a high voltage bulk power transmission system. The Board's Safety Rules Subcommittee consists of a chairman, who is the head of the Nuclear Health and Safety Department, and members from interested Headquarters Departments and from the regions in which nuclear stations are operating, together with some of the station superintendents and a staff association member. The subcommittee formulates and submits to the Safety Rules Committee for approval safety rules relevant to protection against any radiological hazards arising from materials or devices. The committee keeps safety rules under review and receives and approves recommendations from the subcommittees. After consideration by a joint management and staff advisory council safety rules are approved by the board's central Executive Committee and promulgated.</p>		
	C. Central Electricity Generating Board	Mr. C. A. Adams Chief Nuclear Health and Safety Officer Central Electricity Generating Board Laud House 20 Newgate Street London, E.C.1, England
18. <u>Yugoslavia</u>	Institute of Nuclear Sciences	Milorad Ristic, Director Institute of Nuclear Sciences "Boris Kidrich" P.O. Box 522 Belgrade, Yugoslavia
<p>The Institute, established in 1947, is engaged in fundamental research in the fields of low energy nuclear physics, solid state physics, radiochemistry, and problems of nucleic acid metabolism and radiogenetics. Also, research is being conducted on nuclear power problems, including such topics as reactor physics, heat transfer, reactor engineering, reactor electronics, and fuel element development and design. Scientific papers are published in the Institute's Bulletin. The address of the Institute is P.O. Box 522, Belgrade, Yugoslavia; Professor Milorad Ristic, General Manager.</p>		

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
8) Planning Engineers' Guide to Health Physics. Functional Requirements in the Design of Radioactive Buildings and Laboratories	S.S.B./M.E.	Approved	2-59	
9) Specification for Transport Container Padlock	UKAEA (IG) 72070	Approved	5-59	
10) Standard Miscellaneous Components - Dosimeters	UKAEA (IG) 934/17	Approved	8-59	
11) Code of Practice; Clean Condition Facilities (Their Design, Preparation and Use)	AECF (E) 1020	Approved	9-64	
1) Central Electricity Safety Rules: Radiological	8th Rev.	Approved	11-66	
2) Electricity Supply Safety Rules: Ionising Radiations for Non-destructive Examination	2nd Rev.	Approved	1963	
1) Regulation on Health Protection Conditions for Working with Sources of Ionizing Radiation	Operating Bulletin No. 3	Approved	7-1-63	
2) Regulation on the Permissible Radiation Doses and Contamination Levels for Humans	Operating Bulletin No. 4	Approved	7-1-63	

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>1. <u>CERN (European Organization for Nuclear Research)</u> CERN, founded in 1952, is an inter-governmental organization composed of thirteen European states, which provide the financial basis for its existence. Its purpose is to ensure collaboration in fundamental research in sub-nuclear physics. CERN conducts only fundamental nuclear research and has no activities related to nuclear energy applications or military work. Contacts exist between CERN and a large number of laboratories and institutes, including the Joint Institute for Nuclear Research, near Moscow, established in 1957 by the U.S.S.R. and eleven other Eastern countries. Pure and fundamental research is conducted in the field of nuclear physics and in particular high energy physics using a 600 Mev synchro-cyclotron. CERN is administered, and broad policy decisions are made, by the CERN Council, which consists of two delegates from each member state plus one observer each from Poland, Turkey, and Yugoslavia. CERN is located at 1211 Meyrin, Geneva 23, Switzerland; Professor B. Gregory, Director General.</p>		<p>Professor Victor F. Weisskopf Director European Organization for Nuclear Research Geneva 23, Switzerland</p>
<p>2. <u>EURATOM (European Atomic Energy Community)</u> EURATOM, founded in January 1958, has as its purpose "the creation of conditions necessary for the speedy establishment and growth of nuclear industries in the six member countries, i.e. Belgium, Federal Republic of Germany, France, Italy, Luxembourg, and the Netherlands." It promotes and facilitates nuclear research in member states and supplements it by carrying out the community's own research and instructional program. EURATOM research is conducted in such areas as reactor physics, controlled fusion, and radioisotope applications, either directly at one of its four establishments of the Joint Research Center, or under association contracts or agreements for nuclear research. Programs of cooperation with the United States and Canada for nuclear power plant development and a contract with the French CEA for controlled fusion research are recent examples of the latter. In the area of radiation protection and safety, EURATOM has a) established regulations providing for uniform safety standards throughout the community, b) worked toward the standardization and coordination of methods for the measurement and control of environmental radioactivity, c) reviewed plans for reactor installations and their radioactive waste disposal systems, and d) studied the movement of radioactive substances in the environment and the safety aspects of nuclear marine propulsion systems. The community publishes a EURATOM Bulletin quarterly and has its administrative headquarters at 51-53 rue Belliard, Brussels 4, Belgium; Pierre Chatenet, President.</p>		<p>M. Pierre Chatenet, President European Atomic Energy Community 51 rue Belliard Brussels, Belgium</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
				Does not originate or promulgate nuclear standards
1) Basic Standards Relative to the Protection of Public Health of the Population and Workers Against Dangers Resulting from Ionizing Radiation	2(11)	Approved	1959	Compulsory for EURATOM states
2) Annexes 1 and 3 of above	5(57)	Approved	1962	Compulsory for EURATOM states
3) Convention on Third Party Liability in Atomic Energy Cases		Active		

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>3. <u>IMCO (Intergovernmental Maritime Consultative Organization)</u></p> <p>IMCO, established in 1959, seeks to facilitate cooperation among governments, to achieve safety and efficient navigation, and to remove restrictions on the movement of international shipping. The Assembly of the IMCO consists of delegates from each of the sixty member countries, plus associate members and observers from other governments and the United Nations, and is responsible for the organization's policy, budget, and election of members to the Council and to the Maritime Safety Committee. It is the responsibility of the Maritime Safety Committee to submit proposals to the assembly concerning international requirements for the efficient navigation and safety of ships, including nuclear propelled ships. The IMCO has its headquarters at 22 Berners Street, London, W.1., England; Jean Roullier, Secretary General.</p>		<p>Roger Grosclaude International Relations and Legal Matters Intergovernmental Maritime Consultative Organization Chancery House Chancery Lane London, W.C.2, England</p> <p>V. Nadeinski Head of Ship Construction Section</p> <p>G. Dente, Head of Cargo and Related Matters Section</p>
<p>4. <u>IATA (International Air Transport Association)</u></p> <p>IATA was founded in 1945 to succeed the International Air Traffic Association, which had been in existence since 1919, and it was given legal status later that year by an Act of the Canadian Parliament. The Association is the agency through which airlines seek to solve jointly those problems they cannot individually surmount. It acts as a central bank of information and technical knowledge for the member airlines, and attempts to 1) promote safe, regular and economical air transport for the peoples of the world, foster air commerce and study problems connected therewith, 2) provide means for collaboration among air transport enterprises engaged in international air transport service, and 3) cooperate with ICAO and other international associations. IATA is a voluntary association of airline companies whose membership is comprised of ninety-four scheduled airlines flying the flags of sixty countries, and its expenses are paid by the member companies. Its budget is about \$1.6 million, and the Annual General Meeting is the governing body. The Association publishes an annual IATA Bulletin and is located at the Terminal Centre Building, 1060 University Street, Montreal 3, Quebec, Canada; Count Nicolo Carandini, President</p>		<p>A. Groenewege, Secretary International Air Transport Association 1060 University Street Montreal 3, P. Q. Canada</p>
<p>5. <u>IAEA (International Atomic Energy Agency)</u></p> <p>The IAEA, established in 1957 through a unanimously adopted resolution of the United Nations, seeks to accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity throughout the world. (It is directed by a twenty-five member board of governors which meets</p>		<p>Hon. Sigvard Eklund, Director General International Atomic Energy Agency Kärntnering 11 Vienna 1, Austria</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1				
International Convention for Safety of Life at Sea, 1960, Chapter VIII, Nuclear Ships		Approved	1960	International Agreement concerning all nuclear ships, except ships of war
1) Recommendations Applicable to Nuclear Ships, of the International Conference on Safety of Life at Sea, 1960		Approved	1960	Recommendations
2) International Maritime Dangerous Goods Code, Class 7, Radioactive Substances		Active		Under preparation
IATA Restricted Articles Regulation	IATA-RA Reg 10th Ed.	Approved	1966	
Safety Series				
1) Safe Handling of Radioisotopes	S.S. No. 1	Approved	1962	IAEA Safety Standards
2) Safe Handling of Radioisotopes; Health Physics Addendum	S.S. No. 2	Approved	1960	Guide-book
3) Safe Handling of Radioisotopes: Medical Addendum	S.S. No. 3	Approved	1960	Guide-book: under revision - to be published jointly by ILO/WHO/IAEA

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>5. <u>IAEA (International Atomic Energy Agency)</u> continued</p> <p>approximately every third month to review the work of the Agency and to decide on the course of further action.) In 1965, there were 90 member nations. (The headquarters office of the IAEA is in Vienna, with the only branch office being in New York for maintaining liaison with the United Nations.) Its work may be described under three principal program areas: a) nuclear power studies, b) the application of radioisotopes in agriculture and medicine in underdeveloped countries and c) the development of international agreements in health and safety. Among its many accomplishments, the IAEA has been responsible for the scientific aspects of the Third International Conference on the Peaceful Uses of Atomic Energy, administered a broad training and fellowship program, developed a broad technical publications program, introduced a system of safeguards for the control of fissionable material intended for peaceful purposes, helped to introduce atomic energy to the developing nations with emphasis on technical assistance, and developed other applications of nuclear energy. Although the IAEA is part of the United Nations system, it retains independence in policy, programming and budgeting matters. It has concluded agreements with the United Nations and with the following specialized agencies: UNESCO, ILO, WHO, WMO, ICAO, FAO, and IMCO. (The budget is made on a calendar year basis, and for 1965 amounted to \$10.4 million.) The IAEA employs a total staff of 650 and has its administrative headquarters at Kärntnerring 11, Vienna 1, Austria; Mr. Sigvard Eklund, Director General.</p>		<p>A. A. V. Fischer, Director Division of External Liaison International Atomic Energy Agency Kärntnerring 11 Vienna 1, Austria</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
4) Safe Operation of Critical Assemblies and Research Reactors	S.S. No. 4	Approved	1961	Guide-book
5) Radioactive Waste Disposal into the Sea	S.S. No. 5	Approved	1961	Guide-book
6) Regulations for the Safe Transport of Radioactive Materials	S.S. No. 6 (Revised)	Approved	1964	IAEA Safety Standards
7) Regulations for the Safe Transport of Radioactive Materials: Notes on Certain Aspects of the Regulations	S.S. No. 7	Approved	1961	Guide-book
8) Use of Film Badges for Personnel Monitoring	S.S. No. 8	Approved	1962	Guide-book
9) Basic Safety Standards for Radiation Protection	S.S. No. 9	Approved	1962	IAEA Safety Standards (under revision)
10) Disposal of Radioactive Wastes into Fresh Water	S.S. No. 10	Approved	1963	Guide-book
11) Methods of Surveying and Monitoring Marine Radioactivity	S.S. No. 11	Approved	1965	Guide-book
12) The Management of Radioactive Wastes Produced by Radioisotope Users	S.S. No. 12	Approved	1965	IAEA Safety Standards
13) The Provision of Radiological Protection Services	S.S. No. 13	Approved	1965	IAEA Safety Standards
14) The Basic Requirements for Personnel Monitoring	S.S. No. 14	Approved	1965	IAEA Safety Standards
15) Radioactive Waste Disposal into the Ground	S.S. No. 15	Approved	1965	Guide-book
16) Manual on Environmental Monitoring in Normal Operations	S.S. No. 16	Approved	1966	Guide-book
17) Techniques for Controlling Air Pollution from the Operation of Nuclear Facilities	S.S. No. 17	Approved	1966	Guide-book
18) Environmental Monitoring in Emergency Situations	S.S. No. 18	Approved	1966	Guide-book
19) The Management of Radioactive Wastes Produced by Radioisotope Users: Technical Addendum	S.S. No. 19	Approved	1966	Guide-book
20) Risk Evaluation for Protection of the Public in Radiation Accidents		Active		Guide-book to be published with WHO
21) Radiological Protection in Mining and Milling of Radioactive Ores		Approved		IAEA Safety Standards (jointly prepared with ILO - in press)
22) Radiation Protection Standards for Radio-luminous Timepieces		Approved		IAEA Safety Standards (jointly prepared with ENEA - in press)
Technical Reports Series				
1) A Basic Toxicity Classification of Radionuclides	T.R.S. No.15	Approved	1963	Guide-book
2) Technology of Radioactive Waste Management Avoiding Environmental Disposal	T.R.S. No.27	Approved	1964	Guide-book
3) Training in Radiological Protection: Curricula and Programming	T.R.S. No.31	Approved	1964	Guide-book

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
5. <u>IAEA (International Atomic Energy Agency)</u> (continued)		D.A.V. Fischer, Director Division of External Liaison International Atomic Energy Agency Kärntnering 11 Vienna 1, Austria
6. <u>ICRP (International Commission on Radiological Protection)</u> The ICRP was established in 1928 under the auspices of the International Congress of Radiology. It was organized to serve radiological and medical groups from all countries of the world by providing technical guidance and recommendations in the field of radiation hazards. Although it has no governmental relationships, in 1956 the World Health Organization formally recognized the ICRP as a non-governmental participating organization and the ICRP has also an official relationship with the International Atomic Energy Agency. The policy adopted by the ICRP in preparing its recommendations on radiation safety standards is to deal with the basic principles of radiation protection, and to leave to the various national protection committees the responsibility of introducing the detailed technical regulations, recommendations or codes of practice best suited to the needs of their individual countries. (The Main Commission of the ICRP is composed of a chairman and not more than 12 members. Members are chosen from nominations submitted by the national delegations to the International Congress of Radiology and by the ICRP itself, and on the basis of their recognized activities in the field, without regard to nationality.) Including its various committees, the ICRP has a total of about 70 members. At present, the ICRP has the following committees: Radiation Effects, Internal Exposure, External Exposure, and Application of Recommendations. The address of the ICRP is Clifton Avenue, Sutton, Surrey, England; Dr. E. Eric Pochin, Chairman.	A. Committee 1. Radiation Effects B. Committee 2. Internal Exposure	E. Eric Pochin, Chairman International Commission on Radiological Protection University College Hospital Medical School University Street London, W.C.1, England H. G. Newcombe, Head Biology Branch Atomic Energy of Canada Ltd. Chalk River, Ontario, Canada K. Z. Morgan, Director Health Physics Division Oak Ridge National Laboratory P.O. Box X Oak Ridge, Tennessee 37830

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
Conventions				
1) Convention on Civil Liability for Nuclear Damage		Approved (not yet in force)	1963	International agreement
2) Liability of Operators of Nuclear Ships		Approved (not yet in force)	1962	International agreement
1) International Recommendations on Radiological Protection	Rev.	Approved	1950	The work of ICRP was preceded in the years before World War II by the International Congress of Radiology which issued a series of recommendations concerning the use of X-rays and radium: (a) X-ray and Radium Protection. Recommendations of the 2nd International Congress of Radiology, 1928. (b) Recommendations of the International X-ray and Radium Protection Commission, 1931. (c) International Recommendations for X-ray and Radium Protection, 1931. (d) International Recommendations for X-ray and Radium Protection, Rev., 1934. (e) International Recommendations for X-ray and Radium Protection, Rev., 1937.
2) Recommendations of the International Commission on Radiological Protection	Rev.	Approved	1954	
3) Report on Amendments During 1956 to the Recommendations of the International Commission on Radiological Protection		Approved	1958	
4) Recommendations of the International Commission on Radiological Protection	ICRP Pub. No. 1	Approved	9-9-58	
5) Report on Decisions at the 1959 Meeting of the International Commission on Radiological Protection		Approved	1960	
6) Recommendations of the International Commission on Radiological Protection (as amended 1959 and revised 1962)	ICRP Pub. No. 6	Approved	1964	
1) Radiobiological Aspects of the Supersonic Transport		Approved	2-66	
2) The Evaluation of Risks from Radiation		Approved	2-66	
1) Report of Committee II on Permissible Dose for Internal Radiation	ICRP Pub. No. 2	Approved	1959	A supplement to ICRP Publication No. 2 appears in ICRP Pub. No. 6
2) A Review of Lung Dynamics		Active		To be published
3) The Standard Man, As Applied to Internal Dose Calculations		Active		To be published
4) A Review of the Physiology of the Gastro-Intestinal Tract in Relation to Radiation Doses from Radioactive Materials		Approved	2-66	A report prepared by a consultant to Committee 2

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
6. <u>ICRP (International Commission on Radiological Protection)</u> (continued)	C. Committee 3. External Exposure	Bo Lindell Radiofysiska Institutionen Karolinska sjukhuset Stockholm 60, Sweden
	D. Committee 4. Application of Recommendations	H. Jammet, Chef de Department de la Protection Sanitaire au Commissariat a l'Energie Atomique B.P. No. 6 Fontenay-aux-Roses (Seine) France
	E. Committee 5. Radioactive Waste Handling and Disposal	
	F. Committee 6. Committee on REE	
	Joint ICRP and ICRU Study	
7. <u>ICRU (International Commission on Radiation Units and Measurements)</u> The ICRU was founded in 1925 under the auspices of the First International Congress of Radiology and has had, since its inception, the principal objective of developing internationally acceptable recommendations regarding: a) quantities and units of radiation and radioactivity, b) procedures suitable for the measurement and application of these quantities in clinical radiology and radiobiology, c) physical data needed in the application of these procedures, the use of which tends to assure uniformity in reporting. In 1955, the Commission entered into an		Dr. I. S. Taylor, Chairman International Commission on Radiation Units and Measurements Suite 604 4000 Brandywine Street NW Washington, D.C. 20016

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) Report of Committee III on Protection Against X-rays up to Energies of 3 Mev and Beta and Gamma Rays from Sealed Sources	ICRP Pub. No. 3	Approved	1960	An addendum to ICRP Pub. No. 3 appears in ICRP Pub. No. 6
2) Calculations of Maximum Permissible Flux Densities for Radiation with Energies up to 400 Mev		Approved	2-66	
1) Report of Committee IV on Protection Against Electromagnetic Radiation above 3 Mev and Electrons, Neutrons and Protons	ICRP Pub. No. 4	Approved	1964	
2) Principles of Environmental Monitoring Related to the Handling of Radioactive Materials		Active		To be published
3) Evaluation of Radiation Doses to Body Tissues from Internal Contamination due to Occupational Exposure		Active		To be published
1) Report of Committee V on the Handling and Disposal of Radioactive Materials in Hospitals and Medical Research Establishment	ICRP Pub. No. 5	Approved	1965	
1) Report of the RBE Committee to the International Commission on Radiological Protection and on Radiological Units and Measurements		Approved	1963	
1) Exposure of Man to Ionizing Radiation Arising from Medical Procedures with Special Reference to Radiation Induced Diseases		Approved	1961	
2) Exposure of Man to Ionizing Radiation Arising from Medical Procedures		Approved	1957	
1) Radiation Quantities and Units	ICRU Report 10a (NBS Handbook No. 84)	Approved	1962	Activities closely coordinated with ICRP and NCRP&M
2) Physical Aspects of Irradiation	ICRU Report 10b (NBS Handbook No. 85)	Approved	1962	
3) Radioactivity	ICRU Report 10c (NBS Handbook No. 86)	Approved	1962	
4) Clinical Dosimetry	ICRU Report 10d (NBS Handbook No. 87)	Approved	1962	

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>7. <u>ICRU (International Commission on Radiation Units and Measurements)</u> continued</p> <p>official relationship with the World Health Organization (WHO), in which the ICRU is looked to for primary guidance in matters of radiation units and measurements, and WHO disseminates the Commission's recommendations. In 1960, the ICRU entered into consultative status with the International Atomic Energy Agency (IAEA). The Commission also considers and makes recommendations on radiation quantities, units and measurements in the field of radiation protection, working in close cooperation with the International Commission on Radiological Protection (ICRP). (The ICRU is limited to twelve members plus a chairman, selected on the basis of their recognized ability in the field. The Commission has recently revised its substructure to include Planning Boards and Task Groups.) The ICRU has its headquarters at 4000 Brandywine Street, NW, Washington, D. C. 20016, U.S.A.</p>		Dr. L. S. Taylor, Chairman International Commission on Radiation Units and Measurements Suite 604 4000 Brandywine Street, NW Washington, D. C. 20016
	A. Fundamental Physical Parameters and Measurement Techniques	Dr. F. W. Spiers, Chairman
	B. Medical and Biological Applications	Dr. H. Vetter, Chairman Austria
	C. Fundamental Physical Parameters	No chairman
	D. X-rays, Gamma Rays and Electrons	Dr. W. Pohlit, Chairman Germany
	E. Heavy Particles	Dr. W. K. Sinclair, Chairman
	F. Medical and Biological Applications (Therapy)	Dr. W. J. Meredith, Chairman
	G. Medical and Biological Applications (Diagnosis)	Dr. Olle Olsson, Chairman
	H. Neutron Fluence and Kerma	Dr. A. H. W. Aton, Jr., Chairman
	I. Protection Instrumentation and Its Application	Dr. L. Larsson, Chairman

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
5) Radiobiological Dosimetry	ICRU Report 10e (NBS Handbook No. 88)	Approved	1962	
6) Methods of Evaluating Radiological Equipment and Materials	ICRU Report 10f (NBS Handbook No. 89)	Approved	1962	
1) Measurement of Low Level Radioactivity		Active		
2) Specification of Accuracy in Certificates		Active		
3) Specification of High Activity Gamma Ray Sources		Active		
1) In Vivo Measurements of Radioactivity		Active		
2) Scanning		Active		
3) Tracer Kinetics		Active		
4) Methods of Assessment of Dose in Tracer Investigations		Active		
1) Radiation Dosimetry: X-rays from 5 to 150 kv		Active		
2) Radiation Dosimetry: X-rays and Gamma Rays from 0.6 to 100 mv		Active		
3) Electron Beam Dosimetry		Active		
1) Dose as a Function of LET		Active		
2) High Energy and Space Radiation Dosimetry		Active		
1) Measurement of Absorbed Dose at a Point in a Standard Phantom (Absorbed Dose Determination)		Active		
2) Methods of Arriving at the Absorbed Dose at any Point in a Patient (In Vivo Dosimetry)		Active		
3) Methods of Compensating for Body Shape and Inhomogeneity and of Beam Modification for Special Purposes (Beam Modification)		Active		
4) Statement of the Dose Achieved (Dosage Specification)		Active		
1) Photographic Materials and Screens		Active		
2) Cine Systems		Active		
3) TV Systems		Active		
1) Neutron Fluence, Energy Fluence, Neutron Spectra and Kerma		Active		
1) Radiation Protection Instrumentation Handbook, Part I		Active		
2) Neutron Instrumentation and its Application to Radiation Protection		Active		

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
7. <u>ICRU (International Commission on Radiation Units and Measurements)</u> continued	J. Ad Hoc Committee on Changes in ICRU Report 10a K. Ad Hoc Committee on Standard for 2-50 Mv X-rays	
8. <u>IEC (International Electrotechnical Commission)</u> The IEC is an autonomous technical division of the International Organization for Standardization (ISO). The IEC was founded in 1904 by an act of the International Congress and affiliated with ISO in 1957. Its purpose is to facilitate coordination and unification of national electrotechnical standards, and it issues recommendations, which express as nearly as possible an international consensus of opinion, intended to assist national committees in their efforts towards harmonizing standards with these recommendations insofar as national conditions permit. The work of the IEC in the nuclear field is handled by Technical Committee 45 (TC/45) on "Electrical Measuring Instruments used in Connection with Ionizing Radiation." The IEC maintains official relations with ITU and International Bureau of Weights and Measures, and consultative status with IMCO. The Commission has one national committee (composed of representatives of technical and scientific organizations which deal with questions of electrical standardization on the national level) in each of 38 countries, and it publishes recommendations and annual reports. The IEC has its headquarters at 1 rue de Varembe, Geneva, Switzerland; Remus Radulet, President.	A. Technical Committee No. 45, Electrical Measuring Instruments Used in Connection with Ionizing Radiation Working Group No. 1, Classification and Terminology Working Group No. 2, Safety Requirements Working Group No. 3, Interchangeability	L. Ruppert, General Secretary International Electrotechnical Commission 1 rue de Varembe Geneva, Switzerland L. Costrell, Chief U.S. Delegate National Bureau of Standards Washington, D. C. 20234 J. Auzouy, Chairman IEC Technical Committee No. 45 Inspection Generale, CEA 29 rue de la Federation Paris 15, France J. Auzouy (as above) S. J. Dagg, Chairman Central Electricity Generating Board 20 Newgate Street London E.C. 1, England W. Böhme, Chairman Siemens and Halske 75 Karlsruhe Rheinbrüchenstrasse 50 Germany Working Group No. 4, Reactor Instrumentation

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
		Active		
		Active		
See subcommittees				
1) Index of Electrical Measuring Apparatus Used in Connection with Ionizing Radiation	IEC 181	Approved	1964	Additional classification, nomenclature and definition work underway. U.S. Representative, L. Costrell, NBS, Washington, D. C. 20234
2) Supplement to Publication 181	IEC 181A	Approved	1965	
3) Addendum to Publication 181	IEC 181B	Active		
Safety Requirements for Electrical Instruments and Equipment Used for the Measurement of Ionizing Radiation		Active	11-64	Drafts circulated to National Committees; U.S. representative D. C. Cook, NRL, Washington, D. C. 20390
1) Standard panels		Active	1-66	U.S. Representative, L. Costrell, NBS, Washington, D. C. 20234 Has been circulated to National Committees
2) Diameters of Cylindrical Radiation Probes		Active	1-66	Has been circulated to National Committees
3) Diameters of Planchets		Active	1-66	Has been circulated to National Committees
4) Supply Voltages		Active	1-66	Has been circulated to National Committees
5) Regulated Power Supply Voltage Tolerances		Active	1-66	Has been circulated to National Committees
6) Rack Dimensions		Active	1-66	Has been circulated to National Committees
7) 20 mm Panel Spacing System (Used by Eastern European Countries)		Active	3-2-65	
8) Signals Between Sample Changers and Counting Instruments		Active	3-2-65	
9) Signal Connectors for Nuclear Instruments		Active	3-2-65	
10) Connectors for Sample Changers		Active	3-2-65	
11) Coaxial Connectors for Probe Cables		Active	3-2-65	
12) Analog and Digital Signals		Active	3-2-65	
13) Standard High Voltage Supplies for Detectors		Active	3-2-65	

Became Subcommittee No. 45A

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
8. <u>IEC (International Electrotechnical Commission)</u>	Working Group No. 5, Radiometric Instruments Used in Prospecting and Mining Industry	J. Lecoq, Chairman Director of Productions, CEA B.P. No. 4 92-Chatillon Sous Bagneux France
	Working Group No. 6, Electrical Measuring Instruments Using Sealed Radiation Sources	E. Steudel, Chairman AEG Werk Heiligenhaus 5628 Heiligenhaus Bez. Düsseldorf, Germany
	Working Group No. 7 Testing Methods	F.E.L. Ten Haaf, Chairman N.V. Philips' Gloeilampen- fabrieken Eindhoven, Netherlands
	Working Group No. 8 Health Physics Instrumentation	
	Working Group No. 9 Radiation Detectors	L. Costrell, Chairman National Bureau of Standards Washington, D. C. 20234
	1. Subcommittee No. 45A Reactor Instrumenta- tion	S. H. Hanauer, Chairman University of Tennessee Knoxville, Tennessee 37916
	Working Group A1, Reactor Instrumenta- tion Principles	A. H. Weaver, Secretariat Central Electricity Generat- ing Board 24 Cathedral Place London E.C.4, England
	Working Group A2, Reactor Instruments	J. Furct, Secretariat CEA, Saclay 78 Gif-sur-Yvette France
	2. Subcommittee No. 45B, Health Physics Instru- mentation	Prof. Brunello Rispoli, Chairman CNEN Via Belisario 15 Rome, Italy
	B. Technical Committee No. 62, Medical X-ray Equipment	Secretariati, Germany

Standard Activities	Issue Number	Status	Draft of Standard or Latest Draft	Remarks
				H. R. Wasson, U.S. Representative, Division of Biology and Medicine, U.S. Atomic Energy Commission, Washington, D. C. 20545
1) Power Sources of Portable Prospecting Equipment	I.E.C. 201	Approved	1965	
2) Power Supply for Air or Land-Vehicle-Mounted Radiometric Equipment		Active	1-66	Circulated to National Committees
3) Use of the International Unit of Measurement for the Radiometric Instrument in Prospecting and Mining Industry		Active	5-66	Circulated to National Committees
4) Complementary Criteria Characterizing the Functioning of the Radiometric Instruments used in Prospecting and Mining Industry.		Active	5-66	Circulated to National Committees
Electrical Measuring Instruments Using Sealed Radiation Sources		Active	11-64	C. Sickentritt, U.S. Representative, Office of Civil Defense, Dept. of Army, Washington, D. C. 20310
Testing Methods		Active		D. C. Cook, U.S. Representative, Code 7440, U.S. Naval Research Laboratory, Washington, D.C.
				This working group became Subcommittee 45B, see below
See working groups				
1) General Principles of Nuclear Reactor Instrumentation	I.E.C. 231	Approved	1966	
2) Chapter on Safety Systems		Active		Circulated for approval 1966
3) Supplements for Particular Reactor Types		Active		Proposed
1) General Recommendations Concerning Nuclear Reactor Instrumentation	I.E.C. 232	Approved	1966	
2) Detectors for Nuclear Reactors		Active		Drafts in preparation
3) Low Level Amplifiers		Active		Drafts in preparation
4) DC Period Meters		Active		Final draft out for approval by National Committees in 1966
5) Principles of Protective System Design		Active		Drafts in preparation
6) Instrumentation for Containment		Active		Drafts in preparation
1) Health Physics Instruments		Active		H. R. Wasson, U.S. Representative, U.S. Atomic Energy Commission, Division of Biology and Medicine, Washington, D. C.

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>9. <u>ISO (International Standards Organization)</u></p> <p>In 1946, the ISO succeeded the International Federation of National Standardizing Associations, known as ISA, which had been organized in 1926. The members of ISO work to develop common industrial, commercial, engineering, and safety standards throughout the world with a view to facilitating international exchange of goods and services and to developing mutual cooperation in the sphere of intellectual, scientific, technological, and economic activity. The ISO now has 50 nations as member bodies. First authority is vested in the General Assembly composed of the delegates from member bodies, which meet every three years, and a Governing Council composed of the President and the representatives of fourteen elected member bodies. The ISO operates through technical committees, composed of the representatives of the national standards bodies of ISO members that desire representation. TC/85 has the primary responsibility for preparing nuclear standards. Twenty-three countries are members of TC/85 and, in the United States, its work is conducted through the U.S.A. Standards Institute. Within TC/85 there are four subcommittees: Terminology, Definitions, Units, and Symbols; Radiation Protection; Reactor Safety; Radioisotopes. Nearly all fields of science and engineering are covered by ISO proper except the electrical field for which the International Electrotechnical Commission (IEC) has responsibility. ISO has consultative status with ECOSOC and UNESCO and has relationships with WMO, ICAO, ITU, IAEA, IMCO, ILO, and FAO. The organization has its headquarters at 1 rue de Varembe, 1211, Geneva 20, Switzerland; A. Viatkins, President.</p>	A. Technical Committee No. 12, Quantities, Units, Symbols, Conversion Factors and Conversion Proposals	C. H. Sharpsten, Secy.-General W. Rambal, Asst. Secy.-General International Standards Organization 1 rue de Varembe Geneva 20, Switzerland
	B. Technical Committee No. 85, Nuclear Energy	Secretariat: U.S.
	Subcommittee No. 1, Terminology, Definitions, Units, and Symbols	Secretariat: U.S.
	Subcommittee No. 2, Radiation Protection	Secretariat: France
	Subcommittee No. 3, Reactor Safety	Secretariat: United Kingdom
	Working Group No. 1	
	Working Group No. 2	
	Working Group No. 3, Containment Structures	L. P. Zick Chicago Bridge and Iron Co. 901 West 22nd Street Oak Brook, Ill. 60523
	Working Group No. 4	
	Working Group No. 5, Criticality Safety	A. D. Callihan Oak Ridge National Laboratory P.O. Box X Oak Ridge, Tennessee 37830
	Working Group No. 6, Nuclear Reactor Pressure Vessels	E. C. Miller Oak Ridge National Laboratory P.O. Box X Oak Ridge, Tennessee 37830
	Subcommittee No. 4, Radioisotopes	Secretariat: Poland

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
Quantities and Units of Nuclear Reactions and Ionizing Radiations	ISO/TC 12 504E	Active	2-63	Preliminary draft
See subcommittees				
1) Nuclear Energy Glossary		Active		U.S. representative from ASA N-2 First series of terms submitted to ISO for approval. Now working on second series of terms. ISO recommendation
2) Basic Ionizing Radiation	R-361	Approved	1963	
1) Basic Safety Standards for Radiation Protection		Active		U.S. representative from ASA N-7
2) Characteristic Quantities and Units of an Ionizing Radiation Source		Active		
3) Characteristic Quantities and Units of a Field of Ionizing Radiation		Active		
4) Characteristic Quantities and Units of the Irradiation of an Individual		Active		
5) Fundamental Principles for Protection in the Design and Construction of Installations for Work on Unsealed Radioactive Materials		Active		
See working groups				
		Inactive		
		Active		
		Active		
Principles of Criticality Safety in Handling and Processing Fissile Material		Active		U.S. representative from ASA N-6
		Active		U.S. representative from ASA N-5
1) Sealed Sources		Active		
2) Unsealed Sources				
3) Beta Ray Sources				

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>10. <u>Lloyds</u> Lloyds' marine classification service comprises approval of design and survey during construction and operation of merchant ships. Published standards cover nuclear merchant vessels. Non-marine activities include inspection of nuclear power plants during construction. The address of the Register is Lloyds' Register of Shipping, 71 Fenchurch Street, London, E.C.3, England; H. U. Pemberton, Chief Engineer Surveyor.</p>		<p>G. E. Fowler, Secretary Lloyds Register of Shipping 71 Fenchurch Street London E.C.3, England</p>
<p>11. <u>OECD (Organization for Economic Cooperation and Development; European Nuclear Energy Agency (ENEA))</u> In 1948 the Organization for European Economic Cooperation (OEEC) was formed to promote the economic growth of Western Europe through co-operative action. The name was changed in 1961 to Organization for Economic Cooperation and Development (OECD) to mark a broadening of the scope of this organization and the inclusion of the United States and Canada as full members. Headquarters are in the Chateau de la Muette, Paris. The OECD is active in promoting joint undertakings in the peaceful uses of atomic energy and has created a specialized agency, the European Nuclear Energy Agency (ENEA), for this purpose. The ENEA, actually established by the OEEC Council in 1957, has as its aims the development of production and uses of nuclear energy for peaceful purposes by means of a) promotion of joint undertakings, b) harmonization of national nuclear programs and coordination of nuclear research and training, c) assessment of role of nuclear energy in meeting Europe's future power requirements and of the resulting nuclear markets, and d) elaboration of uniform nuclear legislation governing health and safety, liability and insurance. Policy for the ENEA is set by a permanent OECD Steering Committee on Nuclear Energy. While the OECD as now constituted is oriented toward economic and technical assistance to less developed countries, the focus of the ENEA continues to be Europe. ENEA is composed of the 18 European member countries of OECD, with the USA, Canada, and Japan as Associate Members. (The budget of ENEA is part of the OECD budget, and for 1965 was about \$630,000.) The agency works in liaison with the other international organizations concerned, especially EURATOM and IAEA. ENEA employs a staff of 53 at 38 Boulevard Suchet, Paris 16e, France; Vrs. W. Hochstresser, Chairman.</p>	<p>Committee on Reactor Safety Technology</p>	<p>Mr. F. R. Farmer, Chairman Safety Division United Kingdom Atomic Energy Authority Risley, Warrington, Lancs England</p> <p>Henri B. Smets, Secretariat Committee on Reactor Safety Technology 38 Boulevard Suchet Paris XVI, France</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) Survey of Pressure Components for Land Based Nuclear Installations Provisional Requirements		Approved	1960	
2) Supplement 1 (to above)		Approved	1960	
3) Provisional Rules for the Classification of Nuclear Ships		Approved	1965	

No standards activities envisioned in the near future

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>12. <u>United Nations</u></p> <p>The UN is an organization composed of states which have accepted the obligations contained in the Charter of the UN, drawn up and signed at the San Francisco Conference in 1945. The four principal purposes of the UN are: 1) to maintain international peace and security, 2) to develop friendly relations among nations, 3) to cooperate internationally in solving international economic, social, cultural and humanitarian problems, and 4) to be a center for harmonizing the actions of nations in attaining these common ends. The membership of the UN has grown from the 51 original members to over 112 presently enrolled. (The United Nations has six principal organs: General Assembly (the main deliberative organ), Security Council (consisting of 5 permanent and 6 temporary members which have primary responsibility for maintaining peace and security), Economic and Social Council, Trusteeship Council, International Court of Justice, and Secretariat.) The UN conducts a variety of functions relating to radiation protection at the international level. It is conscious of the need to establish and maintain contact between scientists and scientific bodies throughout the world, and has played an important role in bringing together information on radiation hygiene and control from all nations. The United Nations General Assembly has established and delegated responsibilities for nuclear safety to various agencies, such as UNSCEAR, WHO, IAEA, FAO, WMO, and ILO. The UN is located in New York City, New York; U Thant, Secretary-General.</p>		<p>U Thant, Secretary-General United Nations United Nations Building New York, New York</p>
<p>UNSCEAR was established in 1955 by the General Assembly of the United Nations, and is composed of groups of specialists from 16 member states. Its objectives are 1) to receive, assemble, and evaluate a. reports on observed levels of radioactive materials as well as external sources of radiation in the environment and b. reports on observations and experiments relevant to the effects of radiation upon man and his environment, 2) to recommend uniform standards with respect to procedures for sample collection, instrumentation, and radiation counting, 3) to make yearly progress reports on radiation levels and effects with evaluations, and indicate research projects which might require further study, and 4) to publish appropriate documents and evaluations. The Committee reports to the General Assembly on levels of radiation from natural as well as man-made sources to which human populations are exposed and evaluates the risks, both genetic and somatic, accruing from such exposures.</p>	<p>A. United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)</p>	<p>Francesco Sella, Secretary United Nations United Nations Building New York, New York</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
See listed organizations				The studies sponsored by the UN and its organizations are regarded as handbooks or "state-of-the-art" reports; they have not yet attempted to promulgate standards as such
Report of the United Nations Scientific Committee on the Effects of Atomic Radiation	Official Records, 17th Session, Suppl.No.16 (A/5216)	Approved	1962	
	Official Records, 19th Session, Suppl.No.14 (A/5814)	Approved	1964	

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
12. <u>United Nations</u> continued		
<p>The FAO, founded in 1945, was the first of the permanent specialized agencies of the United Nations to be founded after World War II. Its function is to provide information and advice to its member governments on all aspects of the production, distribution, and consumption of food and agricultural products in accordance with the current needs. FAO seeks to 1) raise the levels of nutrition and standards of living of the people of the member governments, 2) secure improvements in the efficiency of production and distribution of all food and agricultural products and 3) better the conditions of rural populations. (The organization consists of a Conference, an Executive Committee, and a staff headed by a Director-General.) In recent years, FAO has been assuming an increasing role in activities that involve not only the application of atomic energy and radionuclides to agriculture and food processing, but also in the assessment of the impact and importance of radioactive contamination in the environment as it may affect food and agricultural interests generally. The Atomic Energy Branch cooperates with UNSCEAR in the study on the effects of atomic radiations by assembling data on the levels of fallout radionuclides in essential foods on a worldwide basis. FAO, WHO and IAEA have closely linked interests in this field, which has resulted in co-sponsorship of a number of projects. FAO, Atomic Energy Branch is located at Viale delle Terme di Caracalla, Rome, Italy; Dr. R. A. Silow, Chief.</p>	B. Food and Agriculture Organization (FAO)	G. Wortley, Head Pesticide Residues and Food Protection Section Joint FAO-IAEA Division of Atomic Energy in Agriculture Rome, Italy
<p>WHO was formed by the United Nations Conference in 1945 to act as the directing and coordinating authority on international health work. It has its own governing bodies and independent budgetary resources, and its objective is the attainment by all peoples of the highest possible level of health. WHO is not concerned with problems which individual countries can solve with their own resources, but rather with problems which can only be satisfactorily solved through the cooperation of all, or certain groups of, countries. The organization seeks to collate, codify, standardize, and disseminate data and information concerning epidemiology, quarantine, health statistics, biological standardization, public health laboratory methods, and medical research. The WHO has interests in the uses of radioisotopes in medicine and medical research, and in radiation protection of personnel and of the public. (The work of WHO is carried out by three organs: a) the World Health Assembly, the supreme</p>	C. World Health Organi- zation (WHO)	Dr. R. Lowry Dobson Chief Medical Officer Radiation and Isotopes World Health Organization Palais des Nations Geneva, Switzerland

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
1) International Standards for Drinking Water		Approved	2nd Ed. 1963	Same group also cognizant of European Standards for Drinking Water, revised 1959
2) Public Health Responsibilities in Radiation Protection	Technical Report Series No. 254	Approved	1962	Prepared by WHO Expert Committee on Radiation in 1962
3) Methods of Radiochemical Analysis	Technical Report Series No. 166	Approved	1959	Prepared by WHO/FAO Joint Expert Committee in 1958; revision undertaken at WHO/FAO/IAEA Scientific Meeting in 1964, in press
4) Medical Supervision in Radiation Work	Technical Report Series No. 196	Approved	1959	Prepared by WHO Expert Committee on Radiation in 1959
5) Radiation Hazards in Perspective	Technical Report Series No. 248	Approved	1962	Prepared by WHO Expert Committee on Radiation in 1961
6) Agricultural and Public Health Aspects of Radioactive Contamination in Normal and Emergency Situations		Approved	1964	Proceedings of WHO/FAO/IAEA Seminar in 1961
7) Protection of the Public in the Event of Radiation Accidents		Approved	1964	Proceedings of WHO/FAO/IAEA Seminar in 1963

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>12. <u>United Nations</u> continued</p> <p>authority, b) the Executive Board, the executive organ and c) a Secretariat under the UN Director-General.) As an intergovernmental organization, WHO's business is primarily with governments and especially with their central health authorities, but it also maintains relationships with ILO, FAO, UNESCO, IAEA, UNICEF, and some 65 international non-governmental organizations. WHO now has over 102 member states, and is located at Palais des Nations, 1211 Geneva 10, Switzerland; Dr. M. G. Candau, Director-General.</p> <p>WHO is the specialized agency of the United Nations which seeks to facilitate world-wide cooperation in the establishment of a network of meteorological centers, promote establishment and maintenance of systems for rapid exchange and standardization of meteorological information, and encourage research and training in meteorology, especially its applications to aviation, shipping, and agriculture. The WMO was established in 1951 to succeed the International Meteorological Organization (IMO). (Its policy, program, and budget is fixed by the World Meteorological Congress, together with recommendations from an Executive Committee and a Secretariat.) The WMO policy on the meteorological aspects of the peaceful uses of atomic energy was first established by the Executive Committee in 1956, and takes cognizance of the fact that the movement of radioactive materials in the atmosphere is an important method of transport for radionuclides released to the environment and, as such, has international significance. Nuclear activities of WMO include studies on the use of isotopes for measuring precipitation, soil moisture, evaporation, etc., preparation of publications covering these and other questions, and studies concerning the standardization of instruments and techniques for collecting radioactivity data. The WMO has working arrangements with FAO, UNESCO, ICAO, WHO, ITU, and IMCO, and is located at 41 Avenue Givseppe-Motta, Geneva, Switzerland; Dr. A. Nyberg, President.</p> <p>The ILO is a specialized agency associated with the United Nations. It is an intergovernmental agency, but representatives of employers and of workers as well as representatives of government take part in its work. Within the UN system it is recognized as having special responsibility for social and labour questions. One of its main activities relates to the establishment of international labour standards. The number of international instruments, conventions and recommendations adopted by ILO since 1919 has now reached 244 (122 conventions and 122</p>	<p>C. World Health Organization (WHO), continued</p> <p>D. World Meteorological Organization (WMO)</p> <p>E. International Labor Organization (ILO)</p>	<p>Dr. R. Lowry Dobson Chief Medical Officer Radiation and Isotopes World Health Organization Palais des Nations Geneva, Switzerland</p> <p>Dr. K. Langlo, Chief Technical Division World Meteorological Organization Palais des Nations Geneva, Switzerland</p> <p>Dr. Luigi Parmeggiani, Chief Occupational Safety and Health Branch Conditions of Work and Life Department International Labor Organization CH 1211 Geneva 22, Switzerland</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
8) Public Health and the Medical Use of Ionizing Radiation	Technical Report Series No. 306	Approved	1965	Prepared by WHO Expert Committee on Radiation in 1964

None

Still operating under 1959 conclusion that no standardization required in the field of meteorological aspects of nuclear safety

1) Convention No. 115 Concerning the Protection of Workers Against Ionising Radiations	Approved	1960	International instrument (convention)
2) Recommendation No. 114 Concerning the Protection of Workers Against Ionising Radiations	Approved	1960	International instrument (recommendation)
3) Model Code of Safety Regulations (Ionising Radiations)	Approved	1958 Rev. 1959	Recommendations
4) General Guide on Protection Against Ionising Radiations	Approved	1963	Descriptive guide

II. NUCLEAR STANDARDS ACTIVITIES OF INTERNATIONAL ORGANIZATIONS

International Organization	Standard Organization	Informant, Title, Address
<p>12. <u>United Nations</u> continued</p> <p>recommendations); the number of ratifications is approximately 3000. ILO conventions are conceived as models for national legislation; when ratified by a country constitutes an international commitment for that country. A recommendation on the other hand, is a guide and is not subject to ratification. (The ILO is headed by an International Labour Conference, a governing body which functions as an executive council, and an International Labour Office, which is the permanent secretariat.) It has over 111 countries as member states and is located at 154 rue de Lansanne, 1211 Geneva 22, Switzerland; David A. Morse, Director General.</p>	<p>E. International Labor Organization (ILO) (continued)</p>	<p>Dr. Luigi Parmeggiani, Chief Occupational Safety and Health Branch Conditions of Work and Life Department International Labor Organization CH 1211 Geneva 22, Switzerland</p>
<p>13. <u>Bureau Veritas</u></p> <p>The Bureau undertakes research and control on reactor safety and special researches, such as earthquake shocks protection, reinforced concrete reactor vessels, etc. It conducted a technical safety evaluation of N/S Savannah, and performs such services as erection control of reactor equipment and inspection of fuel elements for various piles. The Bureau is located at 31 rue Henri Rocherfort, Paris 17, France; P. Blanc, Manager.</p>	<p>Maritime Technical Committee; Subcommittee for Nuclear Energy</p>	<p>P. Weiss, Secretary Bureau Veritas 31 rue Henri Rocherfort Paris 17, France</p>

Standard Activities	Issue Number	Status	Date of Standard or Latest Draft	Remarks
5) Guide on Protection Against Ionising Radiations in Industrial Radiography and Fluoroscopy		Approved	1964	Descriptive guide
6) Guide on Protection Against Ionising Radiations in the Application of Luminous Compounds		Approved	1964	Descriptive guide
1) General Technical Conditions for Nuclear Ships (in English)	NI-150B EM4	Approved	10-61	Recommendations
2) Technical Conditions for Heat Exchangers for Nuclear Ships (in French)	NI-151 EM4	Approved	4-63	Recommendations
3) Technical Conditions for the Control of Reactors for Nuclear Ships (in French)	NI-152 EM4	Approved	2-62	Recommendations
4) Technical Conditions for Containment Vessels for Nuclear Ships (in French)	NI-153 EM4	Approved	4-63	Recommendations
5) Technical Conditions for Reactor Pressure Vessels for Nuclear Ships (in French)	NI-154 EM4	Active	2-65	First draft examined, second draft in preparation

BIBLIOGRAPHY

1. Committee on Ionizing Radiation, Selected Bibliography of Radiation Protection Organizations, American Conference on Governmental Industrial Hygienists, 1963. (Copies may be purchased for \$2.00 each from the American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati 2, Ohio.)
2. C. L. Whitmarsh, Status of Activities in Nuclear Standards, Nucl. Safety, 3(4): 1-11 (June 1962).
3. Wm. B. Cottrell, 1966 Compilation of United States Nuclear Standards, 3rd Edition, 1966, USAEC Report ORNL-NSIC-30, Oak Ridge National Laboratory, December 1966.
4. F. Kertesz, A History of Nuclear Standards for Safety, Nucl. Safety, 2(3): 5-7 (March 1961).
5. Wm. B. Cottrell, National and International Nuclear Codes, Standards and Regulations, Nucl. Safety 7(4): 415-417 (Summer 1966).
6. World Nuclear Directory, 3rd Edition, Harrap Research Publications, London, W.C.1 (1966).
7. A. J. Arthur, Official Yearbook of the Commonwealth of Australia, No. 47, Commonwealth Government Printer, Canberra (1961).
8. John F. Hogerton, The Atomic Energy Deskbook, Reinhold Publishing Corporation, New York (1963).
9. Atomic Handbook, Vol. I, John W. Shorthall, Editor, Morgan Brothers Limited, London (1965).
10. The Europe Year Book 1966, Vols. I and II, Europe Publications Limited, London W.C. 1.
11. Repertory of the Nuclear Institutions and Industry in Belgium, Groupement Professionnel de L'Industrie Nucleaire, Brussels 1, Belgium.
12. Canadian Almanac and Directory for 1965, Pitman Publishing Corp., New York, New York (1965).
13. Canada Year Book 1962, Dominion Bureau of Statistics, Canada Year Book, Handbook and Library Division.
14. European Research Index, Vol. II, Francis Hodgson Limited, Guernsey, Channel Islands (1965).
15. Yearbook of International Organizations, Union of International Associations, Brussels 1, Belgium (1964).

Internal Distribution

1. T. D. Anderson	64. R. E. MacPherson
2. S. E. Beall	65. W. C. McClain
3. C. G. Bell	66. H. C. McCurdy
4. M. Bender	67. H. A. McLain
5. J. P. Blakely	68. T. L. McLean
6. A. L. Boch	69. J. G. Merkle
7. N. T. Bray	70. J. W. Michel
8. W. E. Browning, Jr.	71. A. J. Miller
9. R. H. Bryan	72. C. M. Murphy
10. J. R. Buchanan	73. H. G. O'Brien
11. D. W. Cardwell	74. L. F. Parsly, Jr.
12-21. Wm. B. Cottrell	75. A. M. Perry
22. K. E. Cowser	76. H. B. Piper
23. E. N. Cramer	77. M. W. Rosenthal
24. F. L. Culler, Jr.	78. P. Rubel
25-44. D. M. Davis	79. J. B. Ruch
45. E. P. Epler	80. A. W. Savolainen
46. W. K. Ergen	81. R. A. Schmidt
47. M. H. Fontana	82. R. L. Scott
48. A. P. Fraas	83. L. B. Shappert
49. W. R. Gall	84. M. J. Skinner
50. P. N. Haubenreich	85. W. S. Snyder
51. H. W. Hoffman	86. I. Spiewak
52. D. G. Jacobs	87. D. B. Trauger
53. W. H. Jordan	88. C. S. Walker
54. P. R. Kasten	89. A. M. Weinberg
55. G. W. Keilholtz	90. H. B. Whetsel
56. F. Kertesz	91. G. D. Whitman
57. J. O. Kolb	92. M. L. Winton
58. C. E. Larson	93-95. Central Research Library
59. C. G. Lawson	96-97. Y-12 Document Reference Sect.
60. T. F. Lomenick	98-1160. Laboratory Records Dept.
61. M. I. Lundin	1161. Laboratory Records (LRD-RC)
62. R. N. Lyon	1162-1261. Nuclear Safety Information
63. H. G. MacPherson	Center

External Distribution

- 1262-1280. W. B. Allred, Stone & Webster Engineering Corp., 225 Franklin Street, Boston, Mass. 02107
- 1281-1290. USA Standards Institute, 10 East 40th St., New York, N.Y. 10016
1291. D. E. Bernhardt, Radiological Health Laboratory, 1901 Chapman Avenue-Annex, Rockville, Maryland 20852

1292. J. G. Bradley, Hanford Atomic Products Operation, P.O. Box 999, Richland, Washington 99352
1293. R. J. Brandt, Gibbs & Hill, Inc., New York, N.Y. 10001
1294. S. H. Brown, National Lead Company, New York, N.Y. 10006
- 1295-1334. D. C. Cook, Code 7640, Naval Research Laboratory, Washington, D. C. 20390
- 1335-1336. Louis Costrell, Radiation Physics Division, National Bureau of Standards, Washington, D. C. 20234
1337. G. Gomez Crespo, Liaison Office, World Health Organization Palais Des Nations, Geneva, Switzerland
- 1338-1377. R. C. DeYoung, USAEC, Washington, D. C. 20545
1378. F. E. Ehrensperger, Southern Services, Inc., 600 N. Eighteenth St., Birmingham 2, Alabama
- 1379-1380. D. A. French, UKAEA, 11, Charles II Street, London S.W.1, England
1381. F. A. Gifford, USWB, Oak Ridge
- 1382-1401. J. B. Godel, Brookhaven National Laboratory, Upton, L.I., New York 11973
1402. H. C. Hopkins, General Atomic, P.O. Box 608, San Diego, Calif. 92112
1403. A. Hunter, UKAEA, Risley, Warrington, Lancs, England
1404. W. A. Kee, AEC-DTI, Washington, D. C. 20545
- 1405-1425. H. W. Koch, Chief, Radiation Physics Division, National Bureau of Standards, Washington, D. C. 20234
- 1426-1445. H. G. Lamb, USA Standards Institute, 10 East 40th Street, New York, N.Y. 10016
1446. J. A. Lieberman, RDT, USAEC, Washington, D. C. 20545
- 1447-1461. J. E. McLaughlin, USAEC-NYOO, 376 Hudson St., New York, N.Y. 10014
- 1462-1465. D. W. Moeller, Northeastern Radiological Health Laboratory, P.O. Box 232, Winchester, Mass. 01890
1466. W. T. Moore, Babcock & Wilcox Co., 1201 Kemper Street, Lynchburg, Virginia 24505
- 1467-1486. M. Novick, Argonne National Laboratory, Idaho Falls, Idaho
- 1487-1491. A. J. Pressesky, AEC-RDT, Washington, D. C. 20545
- 1492-1511. C. Roderick, Westinghouse Electric Corp. Box 355, Pittsburgh, Pennsylvania 15230
1512. Virginia D. Rose, Allis-Chalmers Mfg. Co., 6935 Arlington Rd., Bethesda, Maryland 20014
- 1513-1532. J. C. Russ, General Electric Company, P.O. Box 254, San Jose, California 95103
- 1533-1552. R. F. Shea, 14 Coronet Court, Schenectady, N.Y. 12309
1553. F. W. Simpson, General Atomic, P.O. Box 608, San Diego, Calif. 92112
1554. J. Tadmor, Israel Atomic Energy Commission, Soreq Nuclear Research Centre, Yavne, Israel
1555. Mary Vasilakis, Westinghouse Electric Corp. Box 355, Pittsburgh, Pennsylvania 15230
- 1556-1815. Given distribution as shown in TID-4500 under Reactor Technology category (25 copies - CFSTI)

Printed in the United States of America. Available from Clearinghouse for Federal
Scientific and Technical Information, National Bureau of Standards,
U.S. Department of Commerce, Springfield, Virginia 22151
Price: Printed Copy \$3.00; Microfiche \$0.65

LEGAL NOTICE

This report was prepared as an account of Government sponsored work. Neither the United States, nor the Commission, nor any person acting on behalf of the Commission:

- A. Makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or
 - B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.
- As used in the above, "person acting on behalf of the Commission" includes any employee or contractor of the Commission, or employee of such contractor, to the extent that such employee or contractor of the Commission, or employee of such contractor prepares, disseminates, or provides access to, any information pursuant to his employment or contract with the Commission, or his employment with such contractor.