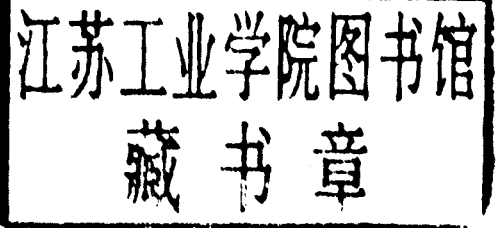


National Fire Codes[®] 1985

National Fire Codes[®]

A Compilation of NFPA Codes, Standards,
Recommended Practices, Manuals and Guides

Volume 3



This is one of 8 volumes of the *National Fire Codes* published by the National Fire Protection Association. The complete set contains the codes, standards, recommended practices, manuals and guides developed by the technical committees of the Association and processed in accordance with the NFPA Regulations Governing Committee Projects.

National Fire Protection Association
Batterymarch Park, Quincy, MA 02269

NATIONAL FIRE PROTECTION ASSOCIATION

Batterymarch Park, Quincy, MA 02269

The National Fire Protection Association was organized in 1896 to promote the science and improve the methods of fire protection and prevention, to obtain and circulate information on these subjects and to secure the cooperation of its members in establishing proper safeguards against loss of life and property by fire. The Association is an international, charitable, technical and educational organization. Its membership includes over one hundred and fifty national and regional societies and associations and over thirty-two thousand individuals, corporations, and organizations. Anyone interested may become a member; membership information is available on request.

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Rev. 11/84

National Fire Codes

The *National Fire Codes* are annual compilations of the Codes, Standards, Recommended Practices, Manuals, Guides and Model Laws prepared by Technical Committees organized under NFPA sponsorship in accordance with the published procedures of the Association. Only those documents which have been adopted by the Association are included in the *National Fire Codes*.

The Board of Directors of the Association appoints persons from those vitally interested, qualified, and active in the areas with which the Committees are concerned so as to achieve a fair balance of affected interests. All service on these NFPA Technical Committees is contributed voluntarily in support of the Association's program for firesafety. While these procedures assure the highest degree of care, neither the National Fire Protection Association, its members, nor those participating in its activities accept any liability resulting from compliance with the provisions given herein, for any restrictions imposed on materials or processes, or for the completeness of the text. Users should realize that complete reliance for firesafety can never rest exclusively on any single safeguard.

The committees responsible for the various texts published herein are given in the introductory sections preceding each. Current committee lists are published in the *NFPA Yearbook*, which may be obtained from the Association. Official records of the adoption of each standard will be found in the *NFPA Technical Committee Reports*, the *Technical Committee Documentation* and *Fire Journal*, a bimonthly membership publication of the Association.

Volumes 1 through 6 contain documents which have been judged suitable for legal adoption and enforcement (Codes and Standards).

Volumes 7 and 8 contain Recommended Practices, Manuals and Guides which are generally referred to as good engineering practices. Also included in these volumes are such documents as model laws and enabling acts which will be found to be particularly helpful to enforcing agencies.

Many of the documents have been approved by the American National Standards Institute as American National Standards. Most of the documents contained in these volumes are also published by the Association in separate pamphlet form.

Users of this document should consult applicable Federal, State and local laws and regulations. NFPA does not, by the publication of this document, intend to urge action which is not in compliance with applicable laws and this document may not be construed as doing so.

Policy adopted by NFPA Board of Directors on December 3, 1982

The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

Official NFPA Definitions

Extracted from the *Regulations Governing Committee Projects*

Section 2. Terms and Definitions.

2-2 Definitions. Where the following terms, commonly found in the Association Committee Documents, are used or defined in the body of the text of a Standard, Code, Recommended Practice, Manual or Guide, they shall be consistent with the intent of these meanings, but these "definitions" may be altered by a Committee to fit the individual needs of the Document. Such altered definition shall be clear and unambiguous in the context in which it is used.

Approved: means "acceptable to the authority having jurisdiction."

NOTE: The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

Authority Having Jurisdiction: The "authority having jurisdiction" is the organization, office, or individual responsible for "approving" equipment, an installation, or a procedure.

NOTE: The phrase "authority having jurisdiction" is used in NFPA Documents in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is primary, the "authority having jurisdiction" may be a federal, state, local, or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance inspection department rating bureau, or other insurance company representative may be the "authority having jurisdiction." In many circumstances, the property owner or his designated agent assumes the role of the "authority having jurisdiction"; at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

Code: A Document containing only mandatory provisions using the word "shall" to indicate requirements and in a form generally suitable for adoption into law. Ex-

planatory material may be included only in the form of "fine print" notes, in footnotes, or in an appendix.

Labeled: Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed: Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

NOTE: The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

Manual or Guide: A Document which is informative in nature and does not contain requirements.

Recommended Practice: A Document containing only advisory provisions (using the word "should" to indicate recommendations) in the body of the text.

Shall: Indicates a mandatory requirement.

Should: Indicates a recommendation or that which is advised but not required.

Standard: A Document containing only mandatory provisions using the word "shall" to indicate requirements. Explanatory material may be included only in the form of "fine print" notes, in footnotes, or in an appendix.

Notes and footnotes are informative only and are not mandatory.

NOTICE

All questions or other communications relating to documents in this volume should be sent only to NFPA Headquarters, addressed to the attention of the Committee responsible for the document.

For information on obtaining Formal Interpretations of the documents, proposing Tentative Interim Amendments, proposing amendments for Committee consideration, and on matters relating to the content of the document, write to the Secretary, Standards Council, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

A statement, written or oral, that is not processed in accordance with Section 16 of the Regulations Governing Committee Projects shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

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National Electrical Code®

1984 Edition

NFPA 70-1984

1984 Edition of the *National Electrical Code*

This 1984 edition of the *National Electrical Code* (NFPA 70-1984) was adopted by the National Fire Protection Association, Inc. on May 19, at its 1983 Annual Meeting, in Kansas City, MO, and was released by the Standards Council on July 14, 1983. It was approved by the American National Standards Institute on August 5, 1983. This 1984 edition supersedes all other previous editions, supplements, and printings dated 1897, 1899, 1901, 1903, 1904, 1905, 1907, 1909, 1911, 1913, 1915, 1918, 1920, 1923, 1925, 1926, 1928, 1930, 1931, 1933, 1935, 1937, 1940, 1942, 1943, 1947, 1949, 1951, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1962, 1965, 1968, 1971, 1975, 1978, and 1981.

Changes in this 1984 edition of the *National Electrical Code* (as compared with the 1981 edition) are indicated by vertical lines in the margin.

There is material in Article 517 which is identified as including text extracted from other NFPA documents. This identification is a result of action at the NFPA Annual Meeting and complaints filed with the NFPA Standards Council.

This Code is purely advisory as far as the NFPA and ANSI are concerned but is offered for use in law and for regulatory purposes in the interest of life and property protection. Anyone noticing any errors should notify the Secretary of the National Electrical Code Committee at the NFPA Executive Office.

History and Development of the *National Electrical Code*

The National Fire Protection Association has acted as sponsor of the *National Electrical Code* since 1911. The original Code document was developed in 1897 as a result of the united efforts of various insurance, electrical, architectural, and allied interests.

In accordance with the provisions of the NFPA Regulations Governing Committee Projects, a National Electrical Code Technical Committee Report containing proposed amendments to the 1981 *National Electrical Code* was published by the NFPA in June, 1982. This report recorded the actions of the various Code-Making Panels and the Correlating Committee of the National Electrical Code Committee on each proposal that had been made to revise the 1981 Code. The report was circulated to all members of the National Electrical Code Committee, and was made available to other interested NFPA members and to the public for review and comment. Following the close of the public comment period, the Code-Making Panels met, acted on each comment and reported their action to the Correlating Committee. The NFPA published the National Electrical Code Technical Committee Documentation in April, 1983, which recorded the actions of the Code-Making Panels and the Correlating Committee on each public comment to the National Electrical Code Technical Committee Report. The NFPA also published the Advanced Printing of the Proposed 1984 *National Electrical Code* in April, 1983 to permit the study and evaluation by those interested, prior to formal action on the Committee Report by the 1983 NFPA Annual Meeting. The National Electrical Code Technical Committee Report and National Electrical Code Technical Committee Documentation were presented to the 1983 NFPA Annual Meeting for adoption. The proceedings of that adoption are published in the September 1983 issue of the *NFPA Fire Journal*®.

The NFPA has an Electrical Section that provides particular opportunity for NFPA members interested in electrical safety to become better informed and to contribute to the development of the *National Electrical Code* and other NFPA electrical standards. Each of the Code-Making Panels and the Chairman of the Correlating Committee reported their recommendations to meetings of the Electrical Section at the 1983 NFPA Annual Meeting. The Electrical Section thus had opportunity to discuss and review the report of the National Electrical Code Committee prior to the adoption of this edition of the Code by the Association.

The time schedule for processing the 1987 edition of the *National Electrical Code* is printed in the back of this Code. Anyone may submit proposals to amend the 1984 Code. Forms for this purpose may be obtained from the Secretary of the Standards Council at NFPA Headquarters.

The NFPA *Standard Electrical Code for One- and Two-Family Dwellings*, NFPA 70A-1984, is an abridged version of the 1984 text, edited only as dictated to eliminate extraneous material not of concern to this type occupancy, and to place in the text only the more popular types of wiring methods, not to exclude any other type authorized by the complete Code.

The *National Electrical Code Handbook* is published by the National Fire Protection Association. This text was prepared by the NFPA Chief Electrical Engineer and the NFPA Electrical Field Service Specialists.

First Printing, August 1983

Printed in U.S.A.

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Allen F. Knickrehm, The Knickrehm Co.
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Thomas E. Sparling, Sparling & Assoc. Inc.
(Alternate to A. C. Lordi)
J. A. Young, City of Montgomery, AL
(Alternate to H. M. Bowling)

Nonvoting

R. G. Anderson, Westinghouse of Canada

PANEL NO. 3 — Articles 300, 305, 690

E. C. Lawry, Chairman
WI Dept. Industrial Labor & Human Relations
(Rep. Int'l Assn. of Electrical Inspectors)

Harold D. Adelman, Southern California Edison Co.
(Rep. Electric Light & Power Group)
Joseph B. Bailey, Republic Steel Corp.
(Rep. Am. Iron & Steel Inst.)
M. E. Cox, Underwriters Laboratories Inc.
Jonah Eidelberg, Gould Inc.
(Rep. Nat'l Electrical Manufacturers Assn.)
Gene H. Mottern, Tennessee Eastman Co.
(Rep. Chemical Manufacturers Assn.)
Howard Schier, Int'l Brotherhood of Electrical Workers, Local 164
B. W. Whittington, Union Carbide Corp.
(Rep. Inst. of Electrical & Electronics Engineers)
Thomas H. Wood, Cecil B. Wood Inc.
(Rep. Nat'l Electrical Contractors Assn.)

D. B. Berry, Texas Electric Service Co.
(Alternate to H. D. Adelman)
Robert E. Engeszer, City of St. Louis, MO.
(Alternate to E. C. Lawry)
Richard G. Gewain, American Iron & Steel Inst.
(Alternate to J. B. Bailey)
Richard E. Long, Union Carbide Corp.
(Alternate to B. W. Whittington)
Charles E. Muhleman III, Anaconda - Ericsson Inc.
(Alternate to J. Eidelberg)
Raymond Thompson, Int'l Brotherhood of Electrical Workers, Local 5
(Alternate to H. Schier)

Nonvoting

J. Rousseau, Dept. of Labour & Manpower,
Montreal, Quebec, Canada

Alternates

Charles R. Bartholf, Underwriters Laboratories Inc.
(Alternate to M. E. Cox)

PANEL NO. 4 — Articles 225, 230, 240

Glen W. Cock, Chairman
Tampa Electric Co.
(Rep. Electric Light & Power Group)

Jim W. Beard, Union Carbide Corp.
(Rep. Inst. of Electrical & Electronics Engineers)
Harvey L. Bowles, Rural Electrification Admin.
(Vote limited to Articles 225, 230)
Lawrence D. Clark, Int'l Brotherhood of Electrical Workers, Local 369
Robert T. Davis, Jr., Knoxville Utilities Board
(Rep. American Public Power Assn.)
(Vote limited to Articles 225, 230)
Robert C. Edwards, Armco Inc.
(Rep. Assn. of Iron & Steel Engineers)
Paul P. Gubany, Bussman Mfg. Div., McGraw Edison Co.
(Vote limited to Article 240)
Patrick R. Herbert, High Voltage Maintenance Corp.
(Rep. Nat'l Electrical Testing Assn.)
(Vote limited to Article 240)
Norbert J. Izydorek, Underwriters Laboratories Inc.
John H. Kassebaum, Eli Lilly & Co.
(Rep. Chemical Manufacturers Assn.)
Carl C. Landinger, Alcoa Conductor Products Co.
(Rep. The Aluminum Assn.)
(Vote limited to Articles 225, 230)
William A. Muska, Muska Electric Co.
(Rep. Nat'l Electrical Contractors Assn.)
R. A. Niedermeyer, Electrical Div., Portland, OR
(Rep. Int'l Assn. of Electrical Inspectors)
Lloyd Nordholm, City of Phoenix, AZ
(Vote limited to Articles 225, 230)
Albert J. Reed, New York Board of Fire Underwriters
(Vote limited to Articles 225, 230)

Ben Z. Segall, New Orleans, LA
Harry I. Stanback, Square D Co.
(Rep. Nat'l Electrical Manufacturers Assn.)
Leonard K. VanTassel, Carrier Air Conditioning Co.
(Rep. Air Conditioning & Refrigeration Inst.)
(Vote limited to Article 240)

Alternates

Kenneth W. Carrick, Union Carbide Corp.
(Alternate to J. W. Beard)
Richard J. Denny, Air Conditioning & Refrigeration Inst.
(Alternate to L. K. VanTassel)
Richard Diegel, Int'l Brotherhood of Electrical Workers, Local 278
(Alternate to L. D. Clark)
Dean H. Kiohr, Bussmann Mfg. Div., McGraw Edison Co.
(Alternate to P. P. Gubany)
James W. Patterson, Philadelphia Electric Co.
(Alternate to G. W. Cock)
D. G. Portman, Westinghouse Electric Corp.
(Alternate to H. I. Stanback)
Jerry Yetter, Electrical Safety Bureau, Helena, MT
(Alternate to R. Niedermeyer)

Nonvoting

M. R. Holman, Square D Canada

PANEL NO. 5 — Articles 200, 250, 280

L. H. Sessler, Chairman
Bell Laboratories Inc.
(Rep. The Telephone Group)

J. L. Bennett, Black & Decker Co.
(Rep. Power Tool Inst.)
Edward J. Cohen, US Dept. of Agriculture
(Rep. Rural Electrification Admin.)
William R. Drake, Daniel Woodhead Co.
(Rep. Nat'l Safety Council)
Frank D. Emigh, Water Div., City of Tacoma, WA
(Rep. American Water Works Assn.)
(Vote limited to use of water piping systems for grounding)
Gary Gilbert, Int'l Brotherhood of Electrical Workers, Local 231
Russell E. Mattson, Factory Mutual Research Corp.
D. H. McIntosh, Newark, DE
(Rep. Chemical Manufacturers Assn.)
Leo Nagel, ND State Electrical Board
(Rep. Int'l Assn. of Electrical Inspectors)
W. J. Nelswander, Western Electric Co.
(Rep. Inst. of Electrical & Electronics Engineers)
T. Barrett Oliver, Alcoa
(Rep. The Aluminum Assn.)
V. A. Sechler, American Electric Power Service Corp.
(Rep. Electric Light & Power Group)
Walter Skuggevig, Underwriters Laboratories Inc.
Ronald J. Toomer, Toomer Electrical Co., Inc.
(Rep. Nat'l Electrical Contractors Assn.)

Norman H. Davis III, Underwriters Laboratories Inc.
(Alternate to W. Skuggevig)
Edward L. Eldridge, Thomas & Betts Co.
(Alternate to Nat'l Electrical Manufacturers Assn.)
James M. Ferron, Eastman Kodak Co.
(Alternate to W. R. Drake)
Donald J. Frost, Int'l Brotherhood of Electrical Workers, Local 288
(Alternate to G. Gilbert)
C. F. Hedlund, Factory Mutual Research Corp.
(Alternate to R. E. Mattson)
S. Korenkiewicz, Detroit, MI
(Alternate to L. Nagel)
C. L. Pittman, Pittsburgh, PA
(Alternate to T. B. Oliver)
Elliot Rappaport, Smith Hinchman & Grylls
(Alternate to W. J. Nelswander)
Lawrence C. Strachota, Iowa Power & Light Co.
(Alternate to V. A. Sechler)

Nonvoting

K. N. Fennessey, Dept. of Labour,
Edmonton, Alberta, Canada

Alternates

Harvey L. Bowles, US Dept. of Agriculture
(Alternate to E. J. Cohen)

PANEL NO. 6 — Articles 310, 400, 402, Chapter 9 Tables 5 through 9

John E. Lipsey, Chairman
Mississippi Power Co.
(Rep. Electric Light & Power Group)

Edward J. Coffey, Underwriters Laboratories Inc.
John E. Conley, General Electric Co.
(Rep. Nat'l Electrical Manufacturers Assn.)
P. H. Cox, Jr., Arkansas Dept. of Labor
(Rep. Int'l Assn. of Electrical Inspectors)
Dwight Durham, Southwire Co.
(Rep. The Aluminum Assn.)
James W. Frasure, Dow Chemical USA
(Rep. Chemical Manufacturers Assn.)
Dennis M. Johanyak, Int'l Brotherhood of Electrical Workers, Local 306
A. F. Knickrehm, The Knickrehm Co.
(Rep. Nat'l Electrical Contractors Assn.)
L. Bruce McClung, Union Carbide Corp.
(Rep. Inst. of Electrical & Electronics Engineers)
Ben Z. Segall, New Orleans, LA

Kenneth E. Jannot, Detroit Edison Co.
(Alternate to J. E. Lipsey)
Roger S. Keith, Barrington, RI
(Alternate to D. Durham)
D. M. Lines, City of Topeka Inspection Dept., KS
(Alternate to P. H. Cox, Jr.)
J. S. Prifogle, Beldon Corp.
(Alternate to J. E. Conley)
Steven L. Stump, Int'l Brotherhood of Electrical Workers, Local 1340
(Alternate to D. M. Johanyak)
Austin D. Wetherell, Underwriters Laboratories Inc.
(Alternate to E. J. Coffey)

Nonvoting

J. G. C. Henderson, Canada Wire & Cable Ltd.

Alternates

Gerald B. Collins, Thatcher Glass Manufacturing Co.
(Alternate to L. B. McClung)

PANEL NO. 7 — Articles 320, 321, 324, 325, 326, 328, 330, 333, 334, 336, 337, 338, 339, 340, 342, 344, 363, 366

R. D. Sappington, Chairman
Electrical Inspection Div., San Jose, CA
(Rep. Int'l Assn. of Electrical Inspectors)

Morgan Bowen, Macon, GA
(Rep. Int'l Brotherhood of Electrical Workers)
A. P. Haggerty, Scott Paper Co.
(Rep. Inst. of Electrical & Electronics Engineers)
Charles J. Hart, Nat'l Electrical Contractors Assn.
Russell W. Higginbottom, Triangle Conduit & Cable Co.
(Rep. Nat'l Electrical Manufacturers Assn.)
John A. Kroiss, Shell Oil Co.
(Rep. Chemical Manufacturers Assn.)
Carl C. Landinger, Alcoa Conductor Products Co.
(Rep. The Aluminum Assn.)
Howard E. Reymers, Underwriters Laboratories Inc.
D. C. Roberts, American Electric Power Service Corp.
(Rep. Electric Light & Power Group)

Edward J. Coffey, Underwriters Laboratories Inc.
(Alternate to H. E. Reymers)
J. Dale Hampton, Oklahoma Gas & Electric Co.
(Alternate to D. C. Roberts)
Ralph H. Lee, Lee Electrical Engineering Inc.
(Alternate to A. P. Haggerty)
John V. Lipe, ITT Royal Electric Div.
(Alternate to R. W. Higginbottom)
Bryan W. Vaughan, Baum Electric Co.
(Alternate to Nat'l Assn. of Home Builders)
Maurice C. Wagner, Walnut Creek, CA
(Alternate to R. D. Sappington)

Alternates

W. O. Andersen, Jr., Kaiser Aluminum & Chemical Corp.
(Alternate to C. C. Landinger)

PANEL NO. 8 — Articles 318, 331, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 356, 358, 362, 364, 365, 374, Chapter 9 Tables 1 through 4

James L. Adams, Chairman
Union Electric Co.
(Rep. Electric Light & Power Group)

J. M. Beall, Western Tube Conduit Corp.
(Rep. Nat'l Electrical Manufacturers Assn.)
D. L. Breting, Underwriters Laboratories Inc.
Lester C. Drapela, Aluminum Co. of America
(Rep. Inst. of Electrical & Electronics Engineers)
Dwight Durham, Southwire Co.
(Rep. The Aluminum Assn.)
Samuel S. Levinrad, US Veterans Admin.
Milton Lounsbury, New York Board of Fire Underwriters
William F. Miner, Pacoima, CA
(Rep. Motion Picture Assn. of America)
Robert H. Murphy, Wiremold Co.
Ray O'Leary, O'Leary Electric Inc.
(Rep. Nat'l Electrical Contractors Assn.)
Roger L. Sandstedt, Monsanto Co.
(Rep. Chemical Manufacturers Assn.)
Eric Tabuteau, Factory Mutual Research Corp.
John T. Thoenke, Int'l Brotherhood of Electrical Workers, Local 110
Walter G. Wells, American Iron & Steel Inst.
M. L. Young, Springfield, VA
(Rep. Int'l Assn. of Electrical Inspectors)

William G. Bayley, US Steel Corp.
(Alternate to L. C. Drapela)
S. J. Casasanta, The Wiremold Co.
(Alternate to R. H. Murphy)
Roger S. Keith, Barrington, RI
(Alternate to D. Durham)
J. Earl Kreuzer, Electric Products Div., Midland-Ross Corp.
(Alternate to J. M. Beall)
Michael A. Lanni, Universal City Studios
(Alternate to W. F. Miner)
D. H. McIntosh, Newark, DE
(Alternate to R. L. Sandstedt)
Ronald C. Muckway, Int'l Brotherhood of Electrical Workers, Local 531
(Alternate to J. T. Thoenke)
M. S. Parmley, Public Works Dept., City of Houston, TX
(Alternate to M. L. Young)
Richard Troth, VA Office of Construction
(Alternate to S. S. Levinrad)
Armond C. Webb, Pacific Gas & Electric Co.
(Alternate to J. L. Adams)

Nonvoting

G. W. Brand, Vancouver, British Columbia, Canada

Alternates

Charles R. Bartholf, Underwriters Laboratories Inc.
(Alternate to D. L. Breting)

PANEL NO. 9 — Articles 370, 373, 380, 384

R. W. Eckardt, Vice Chairman
Underwriters Laboratories Inc.

Artie O. Barker, Electrical Bureau, Boise, ID
Raymond J. Burniston, T & B/Thomas & Betts
 (Rep. Nat'l Electrical Manufacturers Assn.)
Donald W. Cramer, Monsanto Co.
 (Rep. Chemical Manufacturers Assn.)
Dale R. Deming, Midland-Ross Corp.
Daniel P. LaMorte, Western Electric Co., Inc.
 (Rep. Inst. of Electrical & Electronics Engineers)
Fred J. Smith, Int'l Brotherhood of Electrical Workers, Local 117
Otis R. Thompson, Able Electric Co.
 (Rep. Nat'l Electrical Contractors Assn.)
Max E. Treece, Duke Power Co.
 (Rep. Electric Light & Power Group)
Vinod K. Wadhwa, US Veterans Admin.
C. Worhile, NY Board of Fire Underwriters
 (Rep. Int'l Assn. of Electrical Inspectors)

Paul E. Kaup, Bell of Pennsylvania
 (Alternate to D. P. LaMorte)
Homer M. Lefler, Commonwealth Edison Co.
 (Alternate to M. E. Treece)
Robert Rukamp, Int'l Brotherhood of Electrical Workers, Local 158
 (Alternate to F. J. Smith)
Jeffrey L. Stepilowski, US Veterans Admin.
 (Alternate to V. Wadhwa)

Nonvoting

R. A. Harris, City of Winnipeg, Manitoba, Canada

Alternates

Lynn M. Harton, General Electric Co.
 (Alternate to R. J. Burniston)

PANEL NO. 10 — Articles 422, 424, 426

Ben Z. Segall, Chairman
New Orleans, LA

Walter R. Casella, Northeast Utilities
 (Rep. Electric Light & Power Group)
Curtis J. Diedrick, Hydro Steam Industries Inc.
 (Rep. American Boiler Manufacturers Assn.)
 (Vote limited to Article 424)
Leland Dockery, Dockery Electrical Co.
 (Rep. Nat'l Electrical Contractors Assn.)
Charles A. Dubberley, General Electric Co.
 (Rep. Air Conditioning & Refrigeration Inst.)
Robert L. Eichhorn, Whirlpool Corp.
 (Rep. Assn. of Home Appliance Manufacturers)
Edward T. Hoock, Jr., Int'l Brotherhood of Electrical Workers, Local 1
George Walker Jordan, Jr., Georgia Power Co.
Morris L. Markel, Therma-Ray Mfg. Inc.
 (Rep. Nat'l Electrical Manufacturers Assn.)
 (Liaison Rep. on ANSI-C101)
Leo F. Martin, City of Boston, MA
 (Rep. Int'l Assn. of Electrical Inspectors)
Steven Mazzoni, Underwriters Laboratories Inc.
Robert M. Yurkanin, Electran Process Int'l Inc.
 (Rep. Inst. of Electrical & Electronics Engineers)

Joseph Kuntz, Jr., Nat'l Inst. of Health
 (Alternate to L. F. Martin)
Jerry E. Lawson, TPI Corp.
 (Alternate to M. L. Markel)
Alfred B. Marden, Kidde Systems Inc.
 (Alternate to R. M. Yurkanin)
Donald Meadows, Int'l Brotherhood of Electrical Workers, Local 1
 (Alternate to E. T. Hoock, Jr.)
Heinz Rosen, Underwriters Laboratories Inc.
 (Alternate to S. Mazzoni)
Leo Stambaugh, Texas Power & Light Co.
 (Alternate to W. R. Casella)
John T. Weizeorick, Assn. of Home Appliance Manufacturers
 (Alternate to R. L. Eichhorn)

Nonvoting

K. L. Bellamy, Ontario Hydro
William H. King, Jr., US Consumer Product Safety Commission

Alternates

Richard J. Denny, Air Conditioning & Refrigeration Inst.
 (Alternate to C. A. Dubberley)

PANEL NO. 11 — Articles 430, 440, 670, Chapter 9 Example No. 8

Richard W. Osborn, Chairman
St Louis, MO
 (Rep. Nat'l Electrical Contractors Assn.)

Lucas G. Ananian, General Motors Corp.
 (Rep. Inst. of Electrical & Electronics Engineers)
Ben L. Auger, City of Royal Oak, MI
 (Rep. Int'l Assn. of Electrical Inspectors)
N. Ellis Cannady, Jr., M. B. Haynes Electric Co.
Thomas E. Dye, Olin Corp.
 (Rep. Chemical Manufacturers Assn.)
Robert L. Eichhorn, Whirlpool Corp.
 (Rep. Assn. of Home Appliance Manufacturers)
Paul P. Gubany, Bussman Mfg. Div., McGraw Edison Co.
T. A. Jacoby, Tecumseh Products Co.
 (Rep. Air Conditioning & Refrigeration Inst.)
Charles B. Kish, Travelers Insurance Co.
 (Rep. American Insurance Assn.)
E. C. Lawry, WI Dept. Industrial Labor & Human Relations
Miguel G. Lopez, US Veterans Admin.
R. C. Mierendorf, Square D Co.
 (Rep. Nat'l Electrical Manufacturers Assn.)
David C. Morton, Bethlehem Steel Corp.
 (Rep. Assn. of Iron and Steel Engineers)
Charles B. Schram, Underwriters Laboratories Inc.
V. A. Smith, Virginia Electric & Power Co.
 (Rep. Electric Light & Power Group)
John E. Taylor, Int'l Brotherhood of Electrical Workers, Local 103
A. P. White, Texas Instruments Inc.

R. F. Cressman, Bethlehem Steel Corp.
 (Alternate to D. Morton)
C. A. Dubberley, General Electric Co.
 (Alternate to T. A. Jacoby)
Francis Finnegan, Texas Instruments Inc.
 (Alternate to A. P. White)
J. N. Johnson, City of Akron, OH
 (Alternate to B. L. Auger)
Dean H. Klohr, Bussmann Mfg. Div., McGraw Edison Co.
 (Alternate to P. P. Gubany)
Walter J. Martiny, Jr., General Electric Co.
 (Alternate to R. C. Mierendorf)
N. D. Patton, Convent Chemical Corp.
 (Alternate to T. E. Dye)
Anthony J. Scalone, US Veterans Admin.
 (Alternate to M. Lopez)
Robert H. Stevens, Florida Power & Light Co.
 (Alternate to V. A. Smith)
William M. Swanson, Jr., Joint Apprentice & Training Committee
 (Alternate to J. E. Taylor)
John T. Weizeorick, Assn. of Home Appliance Manufacturers
 (Alternate to R. Eichhorn)
Thomas H. Wood, Cecil B. Wood Inc.
 (Alternate to R. W. Osborn)

Nonvoting

R. G. Anderson, Westinghouse of Canada

Alternates

M. E. Cox, Underwriters Laboratories Inc.
 (Alternate to C. B. Schram)

PANEL NO. 12 — Articles 427, 610, 620, 630, 645, 660, 665, 668, 669, 685

B. W. Whittington, Chairman
Union Carbide Corp.

Samuel P. Axe, ARCO Chemical Co.
(Rep. Inst. of Electrical & Electronics Engineers)
Ralph C. Best, Niagara Mohawk Power Corp.
(Rep. Electric Light & Power Group)
A. R. Cartal, Middle Dept. Inspection Agency Inc.
(Rep. Int'l Assn. of Electrical Inspectors)
Ralph E. Droste, Otis Elevator Co.
(Rep. Nat'l Elevator Industry Inc.)
(Vote limited to Articles 610, 620, 630)
C. James Erickson, E.I. du Pont de Nemours & Co.
(Rep. Chemical Manufacturers Assn.)
(Vote limited to Articles 427, 660, 665, 668, 669, 685)
Arthur G. Forster, Hooker Chemical Corp.
(Rep. Chlorine Inst.)
(Vote limited to Article 668)
George Helfer, Thelco Electrical Contractors
(Rep. Nat'l Electrical Contractors Assn.)
J. W. Hogg, Underwriters Laboratories Inc.
B. J. Lowery, Int'l Brotherhood of Electrical Workers, Local 175
C. L. Pittman, Chattanooga, TN
(Rep. The Aluminum Assn.)
(Vote limited to Articles 645, 660, 665, 668, 669, 685)
William C. Rhine, Cutler-Hammer Inc.
(Rep. Nat'l Electrical Manufacturers Assn.)
Robert Riley, IBM Corp.
(Rep. Computer & Bus. Eqmt. Mfrs. Assn. & Electronic Ind. Assn.)
(Vote limited to Article 645)

H. A. Winkler, Republic Steel Corp.
(Rep. Assn. of Iron & Steel Engineers)
(Vote limited to Articles 610, 620, 630)

Alternates

John F. Burr, Consolidation Coal Corp.
(Alternate to S. P. Axe)
Donald W. Cramer, Monsanto Co.
(Alternate to C. J. Erickson)
Peter J. Dureiko, Town of Vernon, Rockville, CT
(Alternate to A. R. Cartal)
Robert G. Hames, Underwriters Laboratories Inc.
(Alternate to J. W. Hogg)
C. A. Langlois, Reynolds Metals Co.
(Alternate to C. L. Pittman)
Raymond B. Pohlman, Jr., Dover Corp.
(Alternate to R. Droste)
Donald S. Thorburn, Philips Medical Systems Inc.
(Alternate to W. C. Rhine)
T. Neil Thorla, Inland Steel Co.
(Alternate to H. A. Winkler)

Nonvoting

J. T. Kokotailo, Dept. of Labour
Regina, Saskatchewan, Canada

PANEL NO. 13 — Articles 450, 460, 470, 710

K. R. Dennis, Chairman
Northwest Electric Co.
(Rep. Nat'l Electrical Contractors Assn.)

W. O. Andersen, Jr., Kaiser Aluminum & Chemical Corp.
(Rep. The Aluminum Assn.)
Richard B. Boyd, Jr., NC Dept. of Insurance
(Rep. Int'l Assn. of Electrical Inspectors)
E. E. Carlton, Menlo Park, CA
Phil Dowse, Int'l Brotherhood of Electrical Workers, Local 477
Amritpal S. Gill, US General Services Admin.
E. J. Huber, Underwriters Laboratories Inc.
James J. Jefferson, Tennessee Eastman Co.
(Rep. Chemical Manufacturers Assn.)
Russell E. Mattson, Factory Mutual Research Corp.
John A. O'Neill, Jr., US Veterans Admin.
Milton D. Robinson, Milt Robinson Engineering Co.
(Rep. Inst. of Electrical & Electronics Engineers)
W. E. Thomas, Westinghouse Electric Corp.
(Rep. Nat'l Electrical Manufacturers Assn.)
John W. Troglia, WI Electric Power Co.
(Rep. Electric Light & Power Group)

Richard P. Fogarty, Consolidated Edison of NY
(Alternate to J. W. Troglia)
William J. Grostick, Int'l Brotherhood of Electrical Workers, Local 76
(Alternate to P. Dowse)
C. F. Hedlund, Factory Mutual Research Corp.
(Alternate to R. E. Mattson)
Joseph W. Hupp, Acme Electric Corp.
(Alternate to W. E. Thomas)
Walter Kroboth, Exxon Chemical Co.
(Alternate to J. J. Jefferson)
Robert L. Simpson, Monsanto Co.
(Alternate to M. D. Robinson)
A. R. Thompson, City of Durham, NC
(Alternate to R. B. Boyd, Jr.)
Robert I. Tudor, High Voltage Maintenance Corp.
(Alternate to K. R. Dennis)

Alternates

Harry A. Burr, US Veterans Admin.
(Alternate to J. A. O'Neill)

PANEL NO. 14 — Articles 500, 501, 502, 503, 510, 511, 513, 514, 515, 516

Leland J. Hall, Chairman
Montgomery, IL

Robert B. Adams, Dow Chemical Co.
(Rep. Chemical Manufacturers Assn.)
F. D. Alroth, Underwriters Laboratories Inc.
Samuel P. Axe, ARCO Chemical Co.
(Liaison to NFPA Committee on Garages & Parking Structures)
(Vote limited to Articles 500, 502, 503)
David E. Brown, R. Conrader Co., Inc.
(Vote limited to Articles 500, 501, 514)
C. W. Conaway, Industrial Risk Insurers
Leonard S. Corey, Eastman Kodak Co.
(Rep. Inst. of Electrical & Electronics Engineers)
John N. DeMarais, Dept. of State Police, Lansing, MI
(Rep. Fire Marshals Assn. of North America)
Mark W. Earley, Factory Mutual Research Corp.
Bruce E. Ewers, Phillips Petroleum Co.
(Rep. American Petroleum Inst.)
E. B. Hoge, Eastern Air Lines Inc.
(Rep. Int'l Assn. of Electrical Inspectors)
Walter J. Konsewick, Jr., Ohio Edison Co.
(Rep. Electric Light & Power Group)
Gerald W. Lemberg, Lemberg Electric Co. Inc.
(Rep. Nat'l Electrical Contractors Assn.)
Ernest C. Magison, Honeywell Inc.
(Rep. Scientific Apparatus Makers Assn.)

Donald T. Murphy, Ralston Purina Co.
(Rep. American Feed Manufacturers Assn. Inc.)
(Vote limited to Articles 500, 502)
Walter A. Short, Crouse-Hinds Co.
(Rep. Nat'l Electrical Manufacturers Assn.)
Harold B. Smith, Cargill Inc.
(Rep. Grain Elevator & Processing Society)
William T. Trinker, The Mill Mutuals
James A. Weldon, Int'l Brotherhood of Electrical Workers, Local 728

Alternates

Albert A. Bartkus, Underwriters Laboratories Inc.
(Alternate to F. Alroth)
Richard J. Buschart, Monsanto Co.
(Alternate to R. B. Adams)
William Calder, The Foxboro Co.
(Alternate to E. C. Magison)
Courtney C. Duiven, Dept. of State Police, Lansing, MI
(Alternate to J. N. DeMarais)
Joseph H. Kuczka, Killark Electric Mfg. Co.
(Alternate to W. A. Short)
A. E. Mittermaier, Tokheim Corp.
(Alternate to D. E. Brown)

David F. Moorhead, H. K. Webster Co. Inc.
(Alternate to D. T. Murphy)
John E. Owens, E. I. du Pont de Nemours & Co.
(Alternate to L. S. Corey)
Donald C. Pickworth, Consumers Power Co.
(Alternate to W. J. Konsevic, Jr.)
W. L. Raines, St. Louis County Dept. of Public Works
(Alternate to C. B. Joriman)
William F. Schacht, Industrial Risk Insurers
(Alternate to C. W. Conaway)
Warren Stanci, The Mill Mutuals
(Alternate to W. T. Trinker)

George H. St. Onge, Exxon Research & Engineering Co.
(Alternate to B. E. Ewers)
T. S. Yarbrough, Int'l Brotherhood of Electrical Workers, Local 1579
(Alternate to J. A. Weldon)

Nonvoting

D. S. Martin, Underwriters Labs of Canada

PANEL NO. 15 — Articles 445, 480, 518, 520, 530, 540, 700, 701, 702

George W. Flach, *Chairman*
New Orleans, LA
(Rep. Int'l Assn. of Electrical Inspectors)

Gilbert Dovey, Int'l Brotherhood of Electrical Workers, Local 440
Gordon L. Hensel, Hensel Engineering
(Rep. Inst. of Electrical & Electronics Engineers)
V. C. Holloway, Interstate Electric Co.
(Rep. Nat'l Electrical Contractors Assn.)
George T. Howard, George T. Howard Assoc.
(Vote limited to Articles 518, 520, 530, 540)
LaVell J. Jensen, Utah Power & Light Co.
(Rep. Electric Light & Power Group)
Jack W. Kalbfeld, Kalico Technology Inc.
(Vote limited to Articles 518, 520, 530, 540)
R. W. Kenny, Bell Laboratories Inc.
(Rep. The Telephone Group)
(Vote limited to Articles 445, 480, 700, 701, 702)
F. K. Kitzantides, Nat'l Electrical Manufacturers Assn.
J. J. Kubisz, Underwriters Laboratories Inc.
William F. Miner, Pacoima, CA
(Rep. Motion Picture Assn. of America)
(Vote limited to Articles 518, 520, 530, 540)
Richard T. Moxey, Moxey Assoc. Inc.
(Vote limited to Articles 445, 480, 700, 701, 702)
Warren A. Petersen, Tork, Inc.
(Rep. Illuminating Engineering Society of North America)
(Vote limited to Articles 445, 480, 700, 701, 702)
W. M. Riches, Nat'l Accelerator Laboratories
(Vote limited to Articles 518, 520, 530, 540)
Anthony J. Scalone, US Veterans Admin.
(Vote limited to Articles 445, 480, 700, 701, 702)
Jay A. Stewart, FMC Corp.
(Rep. Chemical Manufacturers Assn.)
Georg Stromme, Onan Corp.
(Rep. Electrical Generating Systems Marketing Assn.)

Alternates

Charles Crawford, Int'l Brotherhood of Electrical Workers, Local 163
(Alternate to G. Dovey)
Gordon S. Johnson, Kohler Co.
(Alternate to G. Stromme)
Miguel G. Lopez, US Veterans Admin.
(Alternate to A. Scalone)
D. W. Maurer, Bell Laboratories Inc.
(Alternate to R. W. Kenny)
Terrill McGee, Contract Services Admin. Trust Fund
(Alternate to W. F. Miner)
S. G. Roll, Underwriters Laboratories Inc.
(Alternate to J. J. Kubisz)
James G. Stallcup, City of Forth Worth, TX
(Alternate to G. W. Flach)
David G. Strasser, Marathon Electric Manufacturing Corp.
(Alternate to F. K. Kitzantides)
John A. Taylor, Alabama Power Co.
(Alternate to L. J. Jensen)
David Young, Allied Chemical Corp.
(Alternate to J. A. Stewart)
Donald W. Zipse, FMC Corp.
(Alternate to G. L. Hensel)

Nonvoting

J. S. Stevens, Office of the Fire Marshal
Toronto, Ontario, Canada

PANEL NO. 16 — Articles 640, 650, 720, 725, 760, 770, 800, 810, 820

D. Harold Ware, *Chairman*
Belco Inc.
(Rep. Nat'l Electrical Contractors Assn.)

J. M. Cobb, Houston Lighting & Power Co.
(Rep. Electric Light & Power Group)
Edward J. Cohen, US Dept. of Agriculture
Rural Electrification Admin.
Charles D. Hansell, GTE Service Corp. Southern Region
(Rep. Inst. of Electrical & Electronics Engineers)
William R. Hitchens, E. I. du Pont de Nemours & Co.
(Rep. Chemical Manufacturers Assn.)
Bob L. Knapp, Int'l Brotherhood of Electrical Workers
Donald A. Mader, Underwriters Laboratories Inc.
Irving Mande, Edwards Co. Inc.
(Rep. Nat'l Electrical Manufacturers Assn.)
(Liaison to NFPA Committee on Protective Signaling Systems)
H. Marvin McNeil, Sicoor Corp.
(Rep. Insulated Cable Engineers Assn. Inc.)
James F. Meehan, City of New Haven, CT
(Rep. Int'l Assn. of Electrical Inspectors)
William F. Miner, Pacoima, CA
(Rep. Motion Picture Assn. of America)
(Vote limited to Articles 640, 720, 725, 760, 810, 820)
Len H. Sessler, Bell Laboratories Inc.
(Rep. The Telephone Group)
James W. Stilwell, Times Mirror/Communications Properties Inc.
(Rep. Nat'l Cable Television Assn.)
(Vote limited Articles 800, 810, 820)

Alternates

C. Bruce Barksdale, TII Industries, Inc.
(Alternate to C. D. Hansell)
S. E. Egesdal, Honeywell Inc.
(Alternate to I. Mande)
Michael A. Lanni, Universal City Studios
(Alternate to W. F. Miner)
John Mangan, City Hall, Medford, MA
(Alternate to J. F. Meehan)
Kenneth L. Miller, Int'l Brotherhood of Electrical Workers, Local 661
(Alternate to B. L. Knapp)
Paul F. Ryder, Northeast Utilities
(Alternate to J. M. Cobb)

Nonvoting

A. T. Care, Manitoba Telephone System

PANEL NO. 17 — Article 517

George E. Schall, Jr., *Chairman*
Underwriters Laboratories Inc.

W. V. Bitterman, Cleveland Electric Illuminating Co.
(Rep. Electric Light & Power Group)

Kenneth J. Dragmen, Picker Corp.
(Rep. Nat'l Electrical Manufacturers Assn.)

William R. Drake, Daniel Woodhead Co.
(Rep. Nat'l Safety Council)
Douglas Scott Erickson, Camplin Bartels Erickson & Assoc.
Inc.
(Rep. Joint Commission on Accreditation of Hospitals)
Karen S. Kagey, Shrewsbury, MA
Stanley D. Kahn, E. A. Kahn & Co., Inc.
(Rep. Nat'l Electrical Contractors Assn.)
James Kruse, Int'l Brotherhood of Electrical Workers, Local 494
Ralph Loeb, Sherlock Smith & Adams Inc.
(Rep. Health Care Facilities Correlating Committee)
James A. Meyer, Loma Linda Veterans Hospital, CA
(Rep. American Society of Anesthesiologists)
Hugh O. Nash, Jr., Smith Seckman Reid Inc.
J. Philip Simmons, Dept. of Labor & Industries, WA
(Rep. Int'l Assn. of Electrical Inspectors)
William S. Staewen, Sinai Hospital of Baltimore Inc.
(Rep. Assn. for the Advancement of Medical Instrumentation)
Howard C. Stauffer, Hospital Corp. of America
(Rep. NFPA Health Care Section)
Jeffrey L. Stepilowski, US Veterans Admin.
George N. Webb, Johns Hopkins Hospital
(Rep. Inst. of Electrical & Electronics Engineers)
T. Stanley White, Arnold & O'Sheridan Inc.
(Rep. American Hospital Assn.)

Alternates

Alonza W. Ballard, Crouse-Hinds Co.
(Alternate to W. R. Drake)

Robert J. Faust, Int'l Brotherhood of Electrical Workers, Local 309
(Alternate to J. Kruse)
Allen E. Hubble, Idaho Dept. of Labor & Industrial Services
(Alternate to J. P. Simmons)
Mary Ann Kelly, American Hospital Assn.
(Alternate to T. S. White)
M. T. Merrigan, Underwriters Laboratories Inc.
(Alternate to G. E. Schall)
Richard W. Nalbert, Square D Co.
(Alternate to K. J. Dragmen)
Bryan Parker, Montefiore Hospital & Medical Center
(Alternate to W. S. Staewen)
John P. Swope, Derwood, MD
(Alternate to J. A. Meyer)
Vinod K. Wadhwa, US Veterans Admin.
(Alternate to J. L. Stepilowski)

Nonvoting

Chris McGregor, Vancouver, British Columbia, Canada

PANEL NO. 18 — Articles 410, 600, 605

A. F. KnickKrehm, *Chairman*
The KnickKrehm Co.

James T. Duffy, Underwriters Laboratories Inc.
(Rep. to Ad Hoc Subcommittee on Exit Marking and Illumination of Safety to Life Subcommittee on Means of Egress)
Robert J. Illig, Int'l Brotherhood of Electrical Workers, Local 7
E. G. Kiener, Solar Turbines Inc.
(Rep. Inst. of Electrical & Electronics Engineers)
J. M. Licursi, Sacramento, CA
(Rep. Int'l Assn. of Electrical Inspectors)
Walter A. Mueller, Public Information Ctrs.
(Rep. Nat'l Electric Sign Assn.)
A. Ross Naysmith, ETL Testing Lab
(Rep. Illuminating Engineering Society)
Walter A. Short, Crouse-Hinds Co.
(Rep. Nat'l Electrical Manufacturers Assn.)
Herbert O. Spliethoff, Public Service Electric & Gas Co.
(Rep. Electric Light & Power Group)
Jack Wells, Pass & Seymour Inc.

Alternates

Richard F. Gloisten, Underwriters Laboratories Inc.
(Alternate to J. T. Duffy)

Daniel L. Goldberg, Port Authority of NY & NJ
(Alternate to E. G. Kiener)
Kenneth B. Leech, Int'l Brotherhood of Electrical Workers, Local 35
(Alternate to R. J. Illig)
Lloyd Nordholm, City of Phoenix, AZ
(Alternate to J. M. Licursi)
Saul Rosenbaum, Leviton Mfg. Co. Inc.
(Alternate to W. A. Short)
Armond C. Webb, Pacific Gas & Electric Co.
(Alternate to H. O. Spliethoff)

Nonvoting

B. H. Chick, Dept. of Public Works, Ontario, Ottawa, Canada

PANEL NO. 19 — Articles 545, 547, 550, 551, 604, 675

Artie O. Barker, *Chairman*
Electrical Bureau, Boise, ID
(Rep. Int'l Assn. of Electrical Inspectors)

Douglas R. Betts, Fleetwood Enterprises Inc.
(Rep. Western Manufactured Housing Inst.)
(Vote limited to Articles 550, 551)
Paul Duks, Underwriters Laboratories Inc.
Robert C. Fairbairn, FS Services Inc.
(Rep. American Society of Agricultural Engineers)
(Vote limited to Articles 545, 547, 604, 675)
Randol O. Farlow, Georgia Power Co.
(Rep. Electric Light & Power Group)
Bruce A. Hopkins, Recreation Vehicle Industry Assn.
(Vote limited to Article 551)
Melvin Kallenbach, Mel-Kay Electric Co., Inc.
(Rep. Nat'l Electrical Contractors Assn.)
J. Earl Kreuzer, Midland-Ross Corp.
(Rep. Nat'l Electrical Manufacturers Assn.)
Marvin Nabben, Nat'l Assn. of Mutual Insurance Cos.
(Rep. Reinsurance Assn. of Minnesota)
(Vote limited to Articles 545, 547, 604, 675)
Henry Omson, RADCO
(Vote limited to Articles 550, 551)
Glenn C. Safford, Kirby Risk Supply Co. Inc.
(Rep. Nat'l Assn. of Electrical Distributors)
(Vote limited to Articles 545, 547, 604, 675)
Owen Schleisman, Int'l Brotherhood of Electrical Workers, Local 292
Irving Schwartz, Irving Schwartz Assoc.
(Vote limited to Articles 545, 547, 604, 675)
Warren Stancel, The Mill Mutuals
(Vote limited to Article 547)

Ed Starostovic, PFS Corp.
(Rep. Nat'l Assn. of Home Manufacturers)
(Vote limited to Articles 545, 547, 604, 675)
Kent P. Stiner, Traverse City, MI
Philip R. Wanroy, Kampgrounds of America Inc.
(Vote limited to Articles 550, 551)
William G. Wegman, NY Board of Fire Underwriters
(Vote limited to Articles 550, 551)

Alternates

Harold D. Adelman, Southern California Edison Co.
(Alternate to R. O. Farlow)
A. L. Buxton, Gould Inc.
(Alternate to J. E. Kreuzer)
Bob E. Fesmire, Int'l Brotherhood of Electrical Workers, Local 835
(Alternate to O. Schleisman)
Jim Flesham, Oak Harbor, WA
(Alternate to A. O. Barker)
Richard McEnroe, The Mill Mutuals
(Alternate to W. Stancel)
W. Taylor Sams, Southern Electric Co.
(Alternate to M. Kallenbach)
Leo H. Soderholm, Iowa State University
(Alternate to R. C. Fairbairn)
Rene H. Yerke, Underwriters Laboratories Inc.
(Alternate to P. Duks)

PANEL NO. 20 — Articles 555, 680

Charles R. Pierce, Chairman
 Fresno, CA
 (Rep. Int'l Assn. of Electrical Inspectors)

G. Bockmier, Underwriters Laboratories Inc.
Vincent L. Carissimi, Harvey Hubbell Inc.
 (Rep. Nat'l Electrical Manufacturers Assn.)
E. S. Charkey, American Insurance Assn.
Russell E. Hendrick, New York Board of Fire Underwriters
 (Rep. NFPA Committee on Marinas & Boatyards)
W. C. Kessler, Long Island Lighting Co.
 (Rep. Electric Light & Power Group)
Stanley Myers, Swim-mor Equipment Inc.
 (Rep. Nat'l Spa & Pool Inst.)
 (Vote limited to Article 680)
D. Nestor, Nestor Engineering Co.
 (Rep. Nat'l Safety Council)
Philip Sperber, KDI Paragon Inc.
 (Vote limited to Article 680)
Thomas J. Sweeney, Int'l Brotherhood of Electrical Workers,
 Local 595
Seldon E. Tucker, Allied Electrical Construction Co. Inc.
 (Rep. Nat'l Electrical Contractors Assn.)

Donald E. Fritz, Pennsylvania Power & Light
 (Alternate to W. C. Kessler)
C. Levoir, County of Orange, Santa Ana, CA
 (Alternate to C. R. Pierce)
Robert Loesser, Underwriters Laboratories Inc.
 (Alternate to G. E. Bockmier)
James R. McNicol, Baker Hydro Inc.
 (Alternate to S. Myers)
Wayne Thomas, Int'l Brotherhood of Electrical Workers, Local
 617
 (Alternate to T. J. Sweeney)

Nonvoting

G. W. Lawrence, Canadian Standards Assn.

Alternates

Charles W. Draper, Electromagnetic Industries/Square D Co.
 (Alternate to V. L. Carissimi)

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.

NOTE: Membership on a Committee shall not in and of itself constitute an endorsement of the Association or of any document developed by the Committee on which the member serves.