

Meeting Minutes of
National Electrical Safety Code Subcommittee 5
Overhead Lines—Strength and Loading Meeting
2-4 October 2000
IEEE, Piscataway, NJ
Final Minutes Issued 12/01/00

Name	Organization	10/2		10/3		10/4
		am	pm	am	pm	am
Camille Rubeiz	AISI	x	x	x	x	x
Brian Lacoursiere (alt)	AISI	x	x	x	x	x
Richard Aichinger (alt)	AISI	a	a	a	a	a
Michael Madore	APPA	x	x	x	x	x
Joe Rempe	APPA	x	x	x	x	x
Lawrence Slavin	ATIS	a	a	x	x	x
Leon Kempner	BPA	x	x	x	x	x
Nicholas DeSantis	EEI	x	x	x	x	x
Jerry Wong	EEI	x	x	x	x	x
Bruce Freimark	EEI	x	x	x	x	x
Bob Kluge	EEI	x	x	x	x	x
Richard Stanford	EEI	x	x	x	x	x
Thomas Diamatis (alt)	EEI	x	x	x	x	x
Eddy Harrel	EEI	x	x	x	x	x
Darrel Davidchik	EIA	x	x	x	x	x
Frank Denbrock	IEEE	x	x	x	x	x
Tom Pinkham	IEEE	a	a	a	a	a
Richard Hensel	IEEE	a	a	a	a	a
Bob Peters	IEEE	x	x	x	x	a
Walt Jones	IEEE	x	x	x	x	x
Andrew Schwalm (Alt)	IEEE	a	a	a	a	a
Julian Ajello	NARUC	x	x	x	x	x
Bill Fuller	NSPE	x	x	x	x	x
Donald Heald	RUS	x	x	x	x	x
Wade Shultz	SEEX	x	x	x	x	x
Ron Corzine (alt)	SEEX	x	x	x	x	x
Allen Clapp	Self	x	x	x	x	x
Jerry Hanson	Self	x	x	x	x	x
Nelson Bingel	AWPA	x	x	x	x	a
Clayton Clem	TVA	x	x	x	x	x
Doug Hanson	WAPA	a	a	a	a	a
<u>Guests</u>						
Chuck Amrhyn	OPEC Consultants	a	a	x	x	a
Habib Dagher	Univ. of Maine	x	x	a	a	a
Ginger Kamber	S&C Electric	x	x	x	x	a
Martin Rollins	H.M Rollins	x	x	x	x	a

Bruce Strong Stanley Consultants x x x x x

Attendance Record: x=present; a=absent

1. Introduction
Chair Frank Denbrock called the meeting to order at 10:00 a.m. Monday, 2 October 2000. Members and guests introduced themselves.
2. Determine of Voting Eligibility
 - 2.1 Explanation of Voting /balloting procedures
3. Identification and Expression of Concerns Pertaining to SC5 Work Activities to date Relating to Revision of the 1997 NESC
 - 3.1 WG 5.1, Leon Kempner, Chair, Continuity of Sections 24, 25 and 26
 - 3.2 WG 5.2, Robert Peters, Chair, Total Revisions of NESC
 - 3.3 WG 5.6, Tom Pinkham, Chair, Section 27, Insulation
 - 3.4 WG 5.7, Lawrence Slavin, Chair, Seminars, Presentations, Etc.
 - 3.5 WG 5.8, Donald Heald, Chair, Resolve 60 Ft Exemption
 - 3.6 Others

Motion: Form a Task Group to look at all loading factors in Table 253-1. Members of the TF are Kluge (chair), Clapp, Jones, and Freimark.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Rempe, Lacoursiere for Rubeiz, Pinkham by ballot, Shultz, Slavin by ballot, Standford,
 Negative: Wong, Peters,
 Abstention:

- 4.1 Brief Review and Discussion of New Developments, Standards, and Research Affecting SC5 Work
- 4.2 ASCE-7 Extreme Wind Map - Kempner, Wong, Hanson
- 4.3 ASCE-7 and U.S. Corps of Engineers Ice Data, Ice/Wind Map - Clem, Kempner, Peters
- 4.4 Status of ASCE Guides, ANSI 05, ANSI C29, and Other Standards for Application in NESC Editions
- 4.5 Others

Request coordination with ASCE-7. Contact ASCE-7 chair to request a liaison (Action Item -S. Vogel)

Leon Kempner will contact the Corp of Engineers to request continuing input relating to Corp of Engineers ice map.

- 4.6 Discussion of Strategies Used at Seattle Meeting 20-21 July 2000 in Addressing 439 Comments Received on Proposals

5.0 Time for Requested Presentations to SC5 Membership

5.1 American Iron and Steel Institute (AISI)

American Iron and Steel Institute (presentation made in the afternoon at approximately 1:00 p.m. on Monday, 2 October 2000 by Dr. Habib Dagher of the University of Maine and Brian Lacoursiere). Dr. Dagher also provided a handout to SC5 members, a paper entitled "Reliability of Poles in NESC Grade C Construction."

Dr. Dagher discussed the derivation of the values in ANSI O5.1, including adjustments to get a 5% lower exclusion value, to go from green wood to 20% moisture to adjust from single pole to load sharing and related issues. Dr. Dagher discussed derivation of ANSI O5.1 values from small sample specimen tests versus full scale pole break tests.

Dr. Dagher explained the relative reliability issues covered in his paper and suggested methodologies for creating a system for direct comparison of wood and steel structures. Martin Rollins, H.M. Rollins Company, who has made presentations to the subcommittee on wood vs. steel reliability in previous meetings and subcommittee member Robert Peters as well as others challenged a number of the proposals expressed in Dr. Dagher's presentation. There was general discussion with subcommittee members. Particular concern was expressed by several members that it may not be practical to have exact comparisons between metal and wood structures because of the differences in the behavior of the two materials. Several subcommittee members expressed the feeling that you have to design wood as wood and steel as steel. There may not be an easy way to have a steel pole directly compare to the capability of a wood pole that uses ANSI O5.1 class strength rating system. Several members expressed reluctance to change NESC metal-related factors that have used for many years without more data on the resulting effect of the relative changes. (Similar discussions resulted in the deletion of the proposed changes to add factors specific to fiber-reinforced structures until better information is provided from the industry).

No motions were made as a result of the presentation and discussions. (These subject matters are included in the subject areas assigned to Task

Force 5.1.1 and Task Force 5.1.8 for preparation of change proposals for the 2007 Edition of the NESC.)

5.2 Fiber Reinforced Structures

A presentation was initially scheduled for Wednesday morning but was not made as a result of action taken to delay inclusion of values for fiber-reinforced structural materials until the 2007 edition.

6. Secretary's Report on Seattle Meeting - 20-21 July 2000

The decisions made at the meeting were not changed during the balloting of the minutes of the meeting, although several votes were added by absent members or changed by members who had been present.)

A motion was made to accept the July 19-20 2000 SC5 minutes published 10 August 2000 as a final vote. This action ratified all actions taken.

This motion was unanimously approved by SC5 at the time, but AISI later provided Secretary Clapp with a note that changed its vote to negative on this motion *only* as it specifically related to action taken on CPs 2233 and 2384 (i.e., affirmative for actions on other CPs).

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Shultz, Slavin by ballot, Stanford, Wong

Negative: Lacoursiere for Rubeiz re: CPs 2233 and 2384 only
Abstention

6 Completion of Balance of Review of Comments for Revisions to the 2002 Edition of the NESC—see specific actions taken on individual CPs that are detailed below.

6.2 Section 24 Grade of Constructions

6.3 Section 24 Loading for Grades B and C

6.4 Section 26 Strength Requirements

6.5 Section 27 Line Insulation

6.6 Appendix Consideration for CP 2372

6.7 Tentative Interim Amendments

6.8 Interpretation Requests - Relation to Sections 24, 25, 26, and 27

-IR 520 - Discussion Leader Allen Clapp

-Other NESC SC Referrals to SC5

The following are actions taken on individual Comments on Change Proposals.

CP 2217

Rule Definition, energized

Comments 3155, 3183, 3215, 3244, 3352, 3413, 3796

Subcommittee Recommendation: No action required.

CP 2283

Rule 94A

Comments 3354, 3425

Subcommittee Recommendation: No action required.

CP 2284

Rule 94B

Comments 3247

Subcommittee Recommendation: No action required.

CP 2169

Rule 233, 314

Comments: 3188, 3793

Subcommittee Recommendation: No action required.

CP 2262

Rule 242 and 243A4

Comment 3451

Subcommittee Recommendation: Reject.

Subcommittee Comment: The original action to reject is supported.

Vote on Subcommittee Recommendation:

Affirmative: Bingel, , Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Madore, Peters, Pinkham by ballot, Rubeiz, Shultz, Standford, Wong

Negative: Ajello, Clapp

Abstention: Kluge, Rempe, Slavin by ballot,

Explanation of Vote:

Kluge, Rempe Slavin by ballot: The motion is not clear because the action is printed in the Preprint is not clear. The apparent decision was to "reject" CP 2262 but it was followed with text to modify the proposal.

Clapp: The original proposal makes sense.

CP 2262

Rule 242 and 243A4

Comment 3637

Subcommittee Recommendation: Accept Comment 3637. See Comment 3451.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Madore, Peters, Pinkham by ballot, Rubeiz, Shultz, Stanford, Wong

Negative: Ajello, Clapp

Abstention: Kluge, Rempe, Slavin by ballot,

Explanation of Vote:

Clapp: The original proposal makes sense.

Kluge, Rempe, Slavin by ballot: The motion is not clear because the action is printed in the Preprint is not clear. The apparent decision was to "reject" CP 2262 but it was followed with text to modify the proposal.

CP 2151

Rule 250A

Comments handled in Seattle Meeting and ratified in this meeting

CP 2308

Rule 250A3

Comment 3490, 3537, 3638

Subcommittee Recommendation: Reject comments 3490, 3537, 3638. Reject CP 2308 as there is no applicable need in the 2002 edition of the NESC due to actions taken on CPs 2309 and 2372.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Stanford, Wong

Negative

Abstention

CP 2394

Rule 250A4

Comment 3538

Subcommittee Recommendation: Reject comment 3538. CP 2394 is needed to provide clarity.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Stanford, Wong
Negative

Abstention

CP 2305

Rule 250C

Comments handled in Seattle Meeting and ratified in this meeting

CP 2306

Rule 250C

Comments 3294, 3552, 3584, 3592

Subcommittee Recommendation: Accept CP 2306 as written.

Subcommittee Comment: The original CP modification appropriately reflects application of requirements to all materials.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Stanford, Wong
Negative

Abstention

CP 2306

Rule 250C

Comments 3203, 3540, 3803, 3705, 3767

Subcommittee Recommendation: See action taken on CP 2306, comments comments 3294, 3552, 3584,

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Standford, Wong

Negative
Abstention

CP 2307

Rule 250C

Comments 3541, 3553, 3642

Subcommittee Recommendation: Accept comments 3541, 3553, and 3642 and reject CP 2307.

Subcommittee Comment: There is no engineering basis for singling out this particular structure.

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Kempner, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Standford, Wong

Negative: Ajello, Clapp, Kluge, Jones

Abstention: Heald

Explanation of Vote:

Clapp: The wind blows below 60 ft.

CP 2307

Rule 250C

Comments 3204

Subcommittee Recommendation: See action taken on CP 2307, comments 3541, 3553, and 3642.

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Kempner, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Standford, Wong

Negative: Ajello, Clapp, Kluge, Jones

Abstention: Heald

Explanation of Vote:

Clapp: The wind blows below 60 ft.

CP 2309

Rule 250D

Comments handled in Seattle Meeting and ratified in this meeting**CP 2384**

Table 253-1

Comments handled in Seattle Meeting and ratified in this meeting**CP 2233**

Table 253-1

Comments handled in Seattle Meeting and ratified in this meeting**CP 2219**

Table 253-1

Comment 3378, 3165

Subcommittee Recommendation: Reject. See action taken on Comment 3299, CP 2220.

Secretary's Note: The table is confirmed to appear as follows:

Table 253-1
Overload Factors for Structures¹, Crossarms,
Guys, Foundations, and Anchors to Be Used
with the Strength Factors of Table 261-1A

Overload Factors		
	Grade B	Grade C
Rule 250B Loads Vertical Loads ³	1.50	<u>1.90</u> ⁶ 1.50
Transverse Loads Wind	2.50	2.20 ⁴
Wire Tension	1.65 ²	1.30 ⁵
Longitudinal Loads At crossings		
In general	1.10	no requirement
At deadends	1.65 ²	1.30 ⁵
Elsewhere		
In general	1.00	no requirement
At deadends	1.65 ²	1.30 ⁵
Rule 250C Loads	1.00	1.00

CP
2287CP
2309¹ Includes pole.² For guys and anchors associated with structures supporting communication conductors and cables only, this factor may be reduced to 1.33.³ Where vertical loads significantly reduce the stress in a structure member, a vertical load factor of 1.0 should be used for theCP
2233CP
2219

design of such member. Such member shall be designed for the worst case loading.

⁴ This factor may be reduced to 1.75 ~~for wood and reinforced (not prestressed) concrete structures~~ when the span being supported is not at a crossing.

⁵ For metal ~~and~~ or prestressed concrete portions of structures and crossarms, guys, foundations, and anchors, use a value of 1.10.

⁶ For metal or prestressed concrete portions of structures, crossarms, guys, foundations, and anchors, use a value of 1.50.

Secretary Clapp's Note: the original minutes showed the first "and" was to have been crossed out and "and" was to be inserted before crossarms. This did not work. The intent was to make the 1.50 value apply to metal or prestressed concrete structures, crossarms, etc. An alternative was proposed during as a part of the 2nd draft minutes and comments from members indicated the need to use the term "or" to make it clear that the items did not have to be metal and prestressed concrete and to add "portions of" to reflect our earlier discussions of metal fittings on wood braces, etc. These changes are made in the final minutes shown above.

CP 2219

Table 253-1

Comment 3797

Subcommittee Recommendation: Reject

Subcommittee Comment: See action taken on Comment 3299 on CP 2220 shown below.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, , Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Standford, Wong

Negative: Clem

Abstention

CP 2220

Rule 261A3

Comment 3299

Subcommittee Recommendation: Accept comment 3299 and reject CPS 2219, 2220, 2221 and 2222.

Subcommittee Comment: The comment period did not result in provision of appropriate technical data from which to adopt the correct numbers.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, , Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin by ballot, Standford, Wong

Negative: Clem

Abstention

CP 2363

Rule 250C

Comments handled in Seattle Meeting and ratified in this meeting. Task Force 5.1.5 was directed to prepare recommendations for action at this meeting. The following action was taken on the Report of Task Force 5.1.5 Submitted by Subcommittee 5

Subcommittee Recommendation: Accept as modified

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong

Negative

Abstention

CP 2210

Rule 251A4

Comment 3795, 3752

Subcommittee Recommendation: Accept comment 3795.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong

Negative

Abstention

CP 2152

Rule 252C4

Comment 3297, 3544

Subcommittee Recommendation: Accept comment 3297, which would reject CP 2152.

Subcommittee Comment: The wording of Rule 252C4 is simple and straightforward and the new note does not clarify the rule's intent.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong
Negative: Clapp, Madore,
Abstention

Explanation of Vote:

Clapp: Recent experience with transmission line failures due to these conditions indicates the need for a flag.

Madore:

CP 2224

Tables 253-1 and 253-2

Comment 3455

Subcommittee Recommendation: No action required.

CP 2287

Table 253-1

Comment 3165, 3378

Subcommittee Recommendation: No action required.

CP 2226

Rule Table 253-1 and 253-2

Comment 3455

Subcommittee Recommendation: No action required

CP 2300

Rule 261M

Comment 3167

Subcommittee Recommendation: Reject comment 3167 as it pertains to CP 2300.

Subcommittee Comment: The CP is adequate. No additional explanation is required.

Motion: To accept the following revision in lieu of CP 2300:

Change title of 261H3 to be: Splices, Taps, and Deadend Fittings and Associated Attachment Hardware

Change 261H3c to read: Deadend fittings, including the associated attachment hardware....

Revise Rule 261M to read: The strength required for all support hardware not covered by Rule 261F or Rule 261H3 shall be not less than the load times the appropriate overload factor given in Section 25. For appropriate strength factors, see Rule 260B.

Change the title of Rule 253 to include support hardware: Overload Factors for Structures, Crossarms, Support Hardware, Guys, Foundations, and Anchors

Also add "Support Hardware" in the same place in the title of Table 253-1 and Table 261-1A.

Revise Table 261-1A to include a new row titled "Support Hardware" as follows:

	Grade B	Grade C
Strength factors for use with loads of Rule 250B		
Metal and Prestressed-Concrete Structures ⁶	1.0	1.0
Wood and Reinforced-Concrete Structures ^{2, 4}	0.65	0.85
Wood Structures	See footnote 6	See footnote 6
Reinforced Concrete Structures	0.65	0.85
Fiber reinforced composite structures	0.65	0.85
Support Hardware	1.0	1.0
Guy Wire ^{5,6}	0.9	0.9
Guy Anchor and Foundation ⁶	1.0	1.0
Strength factors for use with loads of Rule 250C		
Metal and Prestressed Concrete Structures ⁶	1.0	1.0
Wood and Reinforced Concrete Structures ^{3, 4}	0.75	0.75
Wood Structures	See footnote 6	See footnote 6
Reinforced Concrete Structures	0.75	0.75
Fiber reinforced composite structures	0.75	0.75
Support Hardware	1.0	1.0
Guy Wire ^{5, 6}	0.9	0.9
Guy Anchor and Foundations ⁶	1.0	1.0

CP
2241

CP
2222

Subcommittee Comment: This accepts Comment 3167 in principle.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Pinkham by ballot, Rempe, Lacoursiere voting for Rubeiz, Shultz, Slavin, Standford, Wong

Negative: Clem

Abstention

Explanation of Vote:

Clem: This is getting redundant.

Note from Secretary Clapp: The following paragraph was typed in while we were trying to look at alternatives for action and is not to be added. It continues to be recorded here to assure continuity of information, since its inclusion had been questioned in the first draft minutes and later confirmed that it was replaced by other action.

The requirements of Rule 254 apply to all hardware (shackles, clevises, links, plates, clamps, etc.) except insulators (which are covered by Section 27), pin-type conductor fastenings (which are covered by Rule 261F), and deadend fittings (which are covered by Rule 261H3) connecting the conductor to the structure.

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Hensel, Jones, Kempner, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong
 Negative: Ajello, Heald, Kluge, Madore
 Abstention

Explanation of Vote:

Peters: Motion to reject CP 2300 based on a comment from Don Heald and go back to the original wording in the Code.
 The motion fails for lack of a second.

CP 2289

Rule 260A

Comment 3456

Subcommittee Recommendation: Reject comment 3456.

Subcommittee Comment: The original change proposal stands as rejected in the Preprint.

Vote on Subcommittee Recommendation:

Affirmative: Clem, Davidchik, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rubeiz, Shultz, Standford, Wilkenloh, Wong
 Negative; Madore, Clapp, Slavin, Ajello, Denbrock, Bingel, Rempe
 Abstention

CP 2247
Rule 260C
Comment 3200

Subcommittee Recommendation: No action required.

CP 2241
Rule 261
Comment 3199, 3298, 3644, 3738, 3800

Subcommittee Recommendation: Reject CP 2241.

Subcommittee Comment: ANSI O5.1, .2, and .3 have not yet been approved.

Vote on Subcommittee Recommendation:

Affirmative: Ajello Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wilkenloh, Wong
Negative
Abstention:

CP 2291
Rule 261A1c
Comment 3166, 3300, 3550, 3801

Subcommittee Recommendation: Refer to action taken on CP 2306.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative:
Negative
Abstention

CP 2365
Rule 261A1e
Comment 3807

Subcommittee Recommendation: Accept comment 3807 and modify CP 2365 as suggested.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong
 Negative
 Abstention

CP 2265
 Rule 261B
Comment 3456

Subcommittee Recommendation: Reject. Refer to action on CP 2289.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong
 Negative: Ajello, Clapp
 Abstention

CP 2154
 Rule 261H1
Comment 3301

Subcommittee Recommendation: Accept comment 3301 and make the rule reference change in CP 2154.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong
 Negative
 Abstention

CP 2268
 Rule 261K
Comments 3457, 3469

Subcommittee Recommendation: Accept comment 3457 and 3469 (duplicate comments) and therefore accept CP 2268 and reword Rule 261K as indicated.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong

Negative
Abstention

CP 2180

Table 261-1A

Comment 3458, 3472

Subcommittee Recommendation: Reject comment 3458 and 3472 (duplicate comments).

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Bingel, Clem, Davidchik, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Hensel, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Shultz, Slavin, Stanford, Wong

Negative: Jones, Madore, Rubiez, Heald, Denbrock, Rempe, Ajello, Clapp

Abstention

CP 2368

Table 261-1A

Comment 3379, 3756, 3808

Subcommittee Recommendation: Accept comment 3379 as it pertains to CP 2368, with the exception that the word "calculated" be deleted from FN6.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong

Negative
Abstention

CP 2368

Table 261-1A

Comment 3756

Subcommittee Recommendation: No action required.

CP 2368

Table 261-1A

Comment 3808

Subcommittee Recommendation: Reject. See action on CP 2368, comment 3379.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong

Negative
Abstention

CP 2222

Table 261-1A

Comment 3379, 3798

Subcommittee Recommendation: Accept editorial changes to Table 261-1A as shown below.

Table 261-1A

Strength Factors for Structures,¹ Crossarms, Guys, Foundations, and Anchors for Use with Overload Factors of Table 253-1

(It is recognized that structures will experience some level of deterioration after installation, depending upon materials, maintenance, and service conditions. The table values specify strengths required at installation. Footnotes specify deterioration allowed for wood and reinforced-concrete structures. Structures of other materials shall be both installed and maintained to meet the table values.

CP
2400

When new or changed facilities add loads to existing structures (a) the strength of the structure when new shall have been great enough to support the additional loads and (b) the strength of the deteriorated structure shall exceed the strength required at replacement. If either (a) or (b) cannot be met, the structure must be replaced, augmented, or rehabilitated.)

	Grade B	Grade C
Strength factors for use with loads of Rule 250B		
Metal and Prestressed-Concrete Structures ⁶	1.0	1.0
Wood and Reinforced-Concrete Structures ^{2, 4}	0.65	0.85
Wood Structures	See footnote 6	See footnote 6
Reinforced Concrete Structures	0.65	0.85
Fiber reinforced composite structures	0.65	0.85

CP
2241

CP
2222

Guy Wire ^{5,6}	0.9	0.9
Guy Anchor and Foundation ⁶	1.0	1.0
Strength factors for use with loads of Rule 250C		
Metal and Prestressed Concrete Structures ⁶	1.0	1.0
Wood and Reinforced Concrete Structures ^{3, 4}	0.75	0.75
Wood Structures	See footnote 6	See footnote 6
Reinforced Concrete Structures	0.75	0.75
Fiber reinforced composite structures	0.75	0.75
Guy Wire ^{5, 6}	0.9	0.9
Guy Anchor and Foundations ⁶	1.0	1.0

Footnotes for Table 261-1A

¹ Includes poles.

²Wood and reinforced concrete structures shall be replaced or rehabilitated when deterioration reduces the structure strength to 2/3 of that required when installed. If a structure is replaced, it shall meet the strength required by Table 261-1A. Rehabilitated portions of structures shall have strength greater than 2/3 of that required when installed.

³Wood and reinforced concrete structures shall be replaced or rehabilitated when deterioration reduces the structure strength to 3/4 of that required when installed. If a structure is replaced, it shall meet the strength required by Table 261-1A. Rehabilitated portions of structures shall have strength greater than 3/4 of that required when installed.

⁴Where a wood or reinforced concrete structure is built for temporary service, the structure strength may be reduced to values as low as those permitted by footnotes (2) and (3) provided the structure strength does not decrease below the minimum required during the planned life of the structure.

⁵For guy insulator requirements, see Rule 279.

⁶Deterioration during service shall not reduce strength capability below the required strength.

⁷Wood structures shall apply strength factors as specified in ANSI O5-199x, ANSI O5.2-199x, or ANSI O5.3-199x as applicable.**

CP
2368

CP
2241

Subcommittee Comment: These changes are made to recognize action taken on Comment 3299 which rejected the addition of values for fiber-reinforced materials to these tables due to lack of satisfactory information from the industry upon which to base such values.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, , Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Rempe, Pinkham by ballot, Rubeiz, Shultz, Slavin, Standford, Wong
Negative: Clem
Abstention

CP 2400
Table 261-1A
Comments 3379

Subcommittee Recommendation: Accept that portion of comment 3379 that modifies CP 2400 as shown below.

Table 261-1A

Strength Factors for Structures¹, Crossarms, Guys, Foundations, and Anchors for Use with Overload Factors of Table 253-1

(It is recognized that structures will experience some level of deterioration after installation, depending upon materials, maintenance, and service conditions. The table

^{**}Secretary's Note: CP 2222, CP 2241, and CP 2368 give conflicting direction with regard to Table 261-1A and footnote 6.

CP
2400

values specify strengths required at installation. Footnotes specify deterioration allowed, ~~if any for wood and reinforced concrete structures. Structures of other materials shall be both installed and maintained to meet the table values.~~

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong
 Negative
 Abstention

CP 2400

Table 261-1A

Comment 3302

Subcommittee Recommendation: Reject comment 3302.

Subcommittee Comment: The comment refers to a note; not a footnote. A footnote can contain "shall."

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, , Slavin, Stanford,
 Negative: Shultz, Wong
 Abstention

Explanation of Vote:

Shultz: The added text below the table heading is redundant and unnecessary. The comment is valid.

CP 2400

Table 261-1A

Comment 3749

Subcommittee Recommendation: No action required.

CP 2238

Table 261-1A

Comment 3379

Subcommittee Recommendation: No action required.

CP 2401

Table 261-1B

Comment 3303

Subcommittee Recommendation: Reject comment 3303.

Subcommittee Comment: The comment refers to a note; not a footnote. A footnote can contain "shall."

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, , Slavin, Stanford

Negative: Shultz, Wong

Abstention

Explanation of Vote:

Shultz: The added text below the table heading is redundant and unnecessary. The comment is valid.

CP 2240

Rule 270

Comment 3799

Subcommittee Recommendation: Accept subcommittee Comment from Nick DeSantis and remove proposed Rule 277 Note 2b because IEEE P1024 for composite insulators has not been approved.

~~b. For composite insulators, the manufacturer's "specified cantilever load" for cantilever _____ or "specified mechanical load" for tension, per IEEE Std 1024. rating per ANSI C29.11-1989 [B8].~~

CP 2240

Secretary Clapp's note to members: as a result of this action to delete Part b of the note relative to composite insulators, there is no longer a need for a Part a and Part b for Note 2. Thus, the original wording of Note 2 of the 1997 Edition will be retained without modification *except for updating the dates of the standards.*

Subcommittee Comment: Subcommittee Member DeSantis volunteered to check for latest versions of referenced standards and supply to Secretary Clapp for inclusion herein.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong

Negative:
Abstention

Explanation of Vote:

Note from Secretary Clapp. Nick DeSantis has reported that the updated versions of the standards now referenced in Rule 272 are as follows. They were circulated with the 2nd draft of the minutes. They should be referenced in Rule 272 in accordance with the direction of the subcommittee.

C29.1-1989	American National Standard for electrical power insulators – test methods	Reaffirmed 3/96
C29.2-1992	American National Standard for Insulators, Wet-Process Porcelain and Toughened Glass - Suspension Type	Reaffirmed 1999
C29.3-1986	American National Standard for Wet-Process Porcelain Insulators - Spool Type	Reaffirmed 7/95
C29.4-1989	American National Standard for Wet-Process Porcelain Insulators - Strain Type	Reaffirmed 7/95
C29.5-1984	American National Standard for Wet-Process Porcelain Insulators (Low- and Medium-Voltage <i>Pin</i> Type)	Reaffirmed 7/95
C29.6-1984	American National Standard for Wet-Process Porcelain Insulators – High-Voltage <i>Pin</i> Type	Approved 7/96
C29.7-1986	American National Standard for Wet-Process Porcelain Insulators - High-Voltage Line-Post Type	Approved 7/96

He also reported the following additional C29 standards. C29.9 and C29.11 are presently included in the Bibliography (which, as an appendix, is not part of the Code) in the back of the Code. It is appropriate to expand that bibliography with the other standards.

The following will be added to the Bibliography.

C29.8-1985	American National Standard for Wet-Process Porcelain Insulators - Apparatus, Cap and Pin Type	Reaffirmed 7/95
C29.9-1983	American National Standard for Wet-Process Porcelain Insulators - Apparatus, Post-Type	Reaffirmed 3/96
C29.10-1989	American National Standard for Wet-Process Porcelain Insulators - Indoor Apparatus Type	Reaffirmed 7/95
C29.11-1989	American National Standard for Composite Suspension Insulators for Overhead Transmission Lines – Tests	Reaffirmed 3/96
C29.12-1997	American National Standard for Insulators – Composites - Suspension Type	Approved 4/1997
C29.13-2000	AMERICAN NATIONAL STANDARD FOR INSULATORS - COMPOSITE - DISTRIBUTION DEADEND TYPE	Approved 6/2000

In keeping with the present format of the Bibliography, the last column showing the approval or reaffirmation date will not be shown.

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CP 2286
Rule 276
Comment 3364

Subcommittee Recommendation: Reject comment 3364. Request SC8 to review the status of moving Rule 276 into Section 44. If SC8 rejects this idea, then redirect the question to SC1.

Subcommittee Comment:

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Standford, Wong

Negative:
Abstention

CP 2402
Rule 279A2
Comment 3153

Subcommittee Recommendation: Reject Comment 3153.

Subcommittee Comment: CP 2402 was handled in the third errata sheet for the 1997 Edition and is not required.

Vote on Subcommittee Recommendation:

Affirmative: Unanimous
Negative:
Abstention

CP 2134
Rule 279A2
Comment 3304

Subcommittee Recommendation: No action is required if errata sheet is issued promptly.

CP 2372
Rule Re-Write
Comment from Subcommittee 5

Subcommittee Recommendation: Do not place CP 2372 as an appendix and resubmit CP 2372 through SC 5 as a change proposal for the 2007 edition.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Stanford, Wong
 Negative: Slavin

Explanation of Vote:

Slavin: I support the inclusion of CP 2372 as an appendix. The appendix would be the most convenient means of availing the public of the recommendations of Subcommittee 5 with respect to achieving compatibility with recent ASCE standards.

CP 2372

Rule Re-Write

Comment from Subcommittee 5

Motion: Add under the appropriate wg number an explanation of status of CP 2372. Refer to an NESC website to current status and updates of activity.

Delayed waiting on completion of ice and wind maps. When they are available, they'll be incorporated into appropriate proposals.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Kluge, Madore, Peters, Pinkham by ballot, Rempe, Rubeiz, Shultz, Slavin, Stanford, Wong

8.7 Interpretation Request – IR 520

The following action was taken to correct an inadvertent typographical error in the 1990 Edition that occurred when parts of a rule were split and resulted in an incorrect reference to another subrule. It is in two parts: a TIA to cover the 1990, 1993, and 1997 Editions and a change in the 2002 Edition as a part of action taken on CP 2399.

Part 1 of Action: Correction to 1990, 1993, and 1997 editions.

Motion: Amend Rule 261D4a(2) to change the reference from Rule 261D~~4~~a(1) to Rule 261D~~2~~a(1) to correct a typographical error introduced in the 1990 edition.

Prepare a TIA to cover the 1990, 1993 and 1997 editions.

The proposed change is as follows:

(2) Methods of Meeting ~~Rule 261D4a(1)~~ Rule 261D2a(1)

Grade B: Where conductor tensions are limited to a maximum of 9.0 kN (2000 lb) per conductor, double wood crossarms having cross sections in Table 261-2 and properly assembled will comply with the longitudinal strength requirements in ~~Rule 261D4a(1)~~ Rule 261D2a(1).

Grade C: This requirement is not applicable.

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Madore, Peters, Rempe, Pinkham by ballot, Rubeiz, Shultz, Slavin, Stanford, Wong

Abstention: Kluge

Part 2 of Action: Inclusion of correct reference in the 2002 Edition.

CP 2399

Rule 261D4a(2)

Comment from Subcommittee 5

Modify Rule 261D4a(2) as follows:

(2) Methods of Meeting ~~Rule 261D4a(1)~~ Rule 261D2a(1)

Grade B: Where conductor tensions are limited to a maximum of 9.0 kN (2000 lb) per conductor, double wood crossarms having cross sections in Table 261-2 and properly assembled will comply with the longitudinal strength requirements in ~~Rule 261D4a(1)~~ Rule 261D2a(1).

Vote on Subcommittee Recommendation:

Affirmative: Ajello, Bingel, Clapp, Clem, Davidchik, Denbrock, DeSantis, Freimark, Fuller, J. Hanson, Harrel, Heald, Hensel, Jones, Kempner, Madore, Peters, Rempe, Pinkham by ballot, Rubeiz, Shultz, Slavin, Stanford, Wong

Abstention: Kluge

7 Review Present and Future SC5 Actions and Need to Establish Working Groups, Task Forces, etc.

7.2 WG 5.1, L. Kempner (Chair) Continuity of Sections 24, 25, and 26

-TF 5.1.1 (Kluge) Load Factors

-TF 5.1.2 (Disbanded; Work Combined with TF 5.1.5 Scope of Activities)

-TF 5.1.3 (Disbanded)

-TF 5.1.4 (Kempner) Old/Alternate vs. Recommended Method

-TF 5.1.5 (Disbanded)

-TF 5.1.6 renumbered to TF 5.2.1

-TF 5.1.7 (Bingel) – Fiber Reinforced Composite Structures

- TF 5.1.8 (Bingel) – Grade B vs. Grade C Reliability

7.3 WG 5.2 (Peters) – Total New NESC

- TF 5.2.1 (Clem) – Ice Loading

- 7.4 WG 5.6 (Pinkham) – Line Insulation
 - TF 5.6.1 – Pinkham Coordinate Changes/Improvements
 - TF 5.6.2 – Pinkham, Rojas, DeSantis) – Test Methods/Extreme Loading
- 7.5 WG 5.7 Slavin (Chair) Seminars, Presentations, etc.
- 7.6 WG 5.8 Heald (Chair) Resolve 60 Ft Exemption

8 Review Future and Present SC5 Activities

New TF 5.1.1 to look at consistency of load factors. Chair: Kluge.

Disband TF 5.1.2, 5.1.3

TF 5.1.4 open for consideration

Disband TF 5.1.5

Move TF 5.1.6 into new TF 5.2.1

TF 5.1.7 continue

TF 5.1.8 continue

WG 5.2 – Peters

TF 5.2.1 Clem

WG 5.6 Pinkham

WG 5.7 – Slavin- Seminars, Presentations

TF 5.7.1 Presentations to Public and Industry

- Proposed February 2001 Winter PES, Columbus
Brief Summary of changes in NESC 2002
- July 2001 - Summer PES Vancouver
Brief summary of changes in NESC 2002
- October 2001 Winter T&D Expo, Atlanta GA
Detailed presentation of changes in NESC 2002
- Suggest WG 5.7.1 prepare standard brief presentation
- Monitor informal activities
- Use occasion to solicit results from application of "New Method"
See TF 5.7.2
- Coordinate presentation effort with SC4:

TF 5.7.2

- Solicit and collect results of application of "new method"—
Sections 25-27 and 23
- Request information
- Describe comparative results vs. NESC-2002

- Provide appropriate response form (to be reviewed by SC5)
- Collected information analyzed by WG 5.2
- Coordinate new ice loadings with SC4. Slavin, Clapp and others will work with SC4 to get consideration of the impact of the new ice map on clearances.

WG 5.8 - Chair Heald, Members: Kempner, Wong, Hensel, Slavin

Don Heald proposed that Footnote 5 of Table 253-1 be reviewed by TF 5.1.8.

Mike Madore will participate on TF 5.1.7 and 5.1.8.

Brian Lacoursiere or Dick Aichinger will participate on TF 5.1.8. Habib Dagher will be requested to also participate on 5.1.8.

SC5 considered meeting prior to the beginning of the next revision cycle to provide continuity to its work. March 2002 is considered.

Adjourned 10:10 a.m. Wednesday, October 04, 2000