

**Meeting Minutes  
 National Electrical Safety Code  
 Subcommittee 4  
 Overhead Lines—Clearances  
 October 5-8, 1998  
 IEEE  
 Piscataway, NJ**

Name	Organization	10/5	10/6	10/7	10/8
Chuck Amrhyn	Self	X	X	X	X
Jay Bednarz	Self	X	X	X	X
Charles Bleakley	AEIC	X	X	X	X**
James Bohlk	RUS	X	X	X	X
Joseph Bottino	AAR	ANV	ANV	ANV	ANV
Allen Clapp	Self	X	X	X	X
Tom Crowell (alt)	EI	A	A	A	A
Darrell Davidchik	EIA	X	X	X	X
Eric Engdahl	EI	X	X	X	X
Mickey Gunter (alt)	AEIC	X	X	X	X**
Dennis Henry	ATIS	A	A	A	A
Donald Hooper	Self	X	X	X	X
Jan Howard	APPA	X	X	X	A
Herman Johnson, Jr.	SEEX	X	X	X	X
Dave Komassa	EI	X	X	X	X
Neil LaBrake (alt)	EI	X	X	X	X
Ron Martineau	EI	X	X	X	X
Keku Mistry	Bellcore	X	X	X	X
Stephen Olinick	EI	X	X	X	X
Bob Oswald	IEEE	A	A	A	A
Oliver Perkins	Self	ANV	ANV	ANV	ANV
Jerry Reding	BPA	X*	X	X	X***
Joe Renowden	EI	X	X	X	X
James Ruehl	NARUC	A	A	A	A
Mathew Schwarz	IEEE	X	X	X	X***
Bob Stevens	Self	X*	X	X	X***
Jim Tomaseski	IBEW	A	A	A	A
Bill Washburn	NARUC	A	A	A	A
David Young (alt)	SEEX	X	X	X	X

X = present

A = absent

ANV = absent, not voting

\*arrived at 10:30am

NESC Subcommittee 4 Minutes of Meetings October 5-8, 1998  
Published December 10, 1998

\*\*left at 10:00 am  
\*\*\*left at 11:30 am

**IR 498**

**Definition: Primary Area**

**Subcommittee Recommendation:** No action. Referred to SC#1.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 214A2**

**CP 2211**

The proposer withdrew the proposed change to the first sentence of the existing rule.

**Subcommittee Recommendation:** Accept as modified

Add the following sentence to rule 214A2:

Inspections may be performed in a separate operation or while performing other duties.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Henry, Hooper, Howard, Mistry, Oswald, Reding, Ruehl, Schwarz, Washburn

Negative: Bohlk, Engdahl, Johnson, Komassa, Martineau, Olinick, Renowden, Stevens, Tomaseski

Abstention:

**Explanation of Vote:**

Bohlk: Although the proposed change adds clarification, it does not enhance safety.  
Engdahl, Johnson, Komassa, Martineau, Olinick, Renowden, Stevens, Tomaseski: The additional sentence is redundant.

**Rule 215C2**

**CP 2111**

**Subcommittee Recommendation:** Accept as modified.

Modify rule 215C2 to read as follows:

Guys shall be effectively grounded if attached to a supporting structure carrying any supply

conductors of more than 300 V or if ~~exposed~~ vulnerable to accidental energization by such conductors due to a slack conductor or guy.

Modify 279A2a to read as follows:

Ungrounded guys shall be insulated if attached to a supporting structure carrying any supply conductors of more than 300 V or if vulnerable to accidental energization by such conductors due to a slack conductor or guy.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 215C2**

**CP 2318**

**Subcommittee Recommendation:** Accept as modified. See CP 2111.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 217A (correction: Rule 217B)**

**CP 2215**

**Subcommittee Recommendation:** Reject the wording of the proposal, but modify Rule 217B to clarify the language by adding the word “line” before “conductors”:

B. Unusual Conductor Supports

Where line conductors are attached...

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Explanation of Vote:** Comment by Amrhyn: The rule has been clarified, but I don't see how the modified rule answers the original question.

**Rule 217A1a**

**CP 2319**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 217A1c**

**CP 2320**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 217A2**

**CP 2252**

**Subcommittee Recommendation:** Accept in part.

**Motion 1**

Title Rule 217A2a as: "Readily Climbable Supporting Structures."

Change the word "warning" to "safety" in Rule 217A2a.

Revise the exception under Rule 217A2a as follows:

This rule does not apply where the right of way access to the supporting structure is limited by a fence meeting the height requirements of Rule 110A1.~~fenced.~~

Use the revised exception under both Rules 217A2a and 217A2b, to read:

This rule does not apply where access to the supporting structure is limited by a fence meeting the height requirements of Rule 110A1.

(Secretary's Note: The existing exception under Rule 217A2b is deleted in the original change proposal.)

**Vote on Subcommittee Recommendation for Motion 1:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Oswald, Reding, Renowden, Ruehl, Schwarz, Tomaseski, Washburn

Negative: Olinick, Stevens

Abstention: Mistry

**Explanation of Vote:**

Olinick: I believe that Rule 217A2a was revised in prior editions to reflect the Interpretations that are referenced in the Supporting Comment. The proposed changes now make the Rule applicable to even the most remote locations. The phrase "handhold" will also be subject to wide interpretation.

**Motion 2**

Accept all of the changes to Rule 217A2a that are enclosed in parentheses in the original change proposal. Revised Rule 217A2a will then read as follows:

- a. Readily climbable supporting structures (such as closely latticed poles, towers, or bridge attachments, with a handhold less than 8 feet above ground or lowest permanent foothold) carrying open supply conductors energized at more than 300 V, which are adjacent to roads, regularly traveled pedestrian thoroughfares, or places where persons frequently gather (such as schools or public playgrounds), shall be equipped with barriers to inhibit climbing by unqualified persons or posted with appropriate safety signs.

EXCEPTION: This rule does not apply where access to the supporting structure is limited by a fence meeting the height requirements of Rule 110A1.

NOTE: (text of the existing note is unchanged)

**Vote on Subcommittee Recommendation for Motion 2:**

Affirmative: Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bednarz

Abstention:

**Explanation of Vote:**

Bednarz:

The wording of this change modifies the definition of "Readily Climbable" to where a down guy may be included as a climbable structure.

Hooper:

Action taken by SC 4 is confusing as shown in the minutes. I would like to see all of the changes combined into a single statement in the Preprint.

**Motion 3**

Reject the proposed deletion of the middle of the sentence in Rule 217A2a that begins with "which are adjacent to roads..." Revised Rule 217A2a will then read as follows:

- a. Readily climbable supporting structures (such as closely latticed poles, towers, or bridge attachments, with a handhold less than 8 feet above ground or lowest permanent foothold) carrying open supply conductors energized at more than 300 V, which are adjacent to roads, regularly traveled pedestrian thoroughfares, or places where persons frequently gather (such as schools or public playgrounds), shall be equipped with barriers to inhibit climbing by unqualified persons or posted with appropriate safety signs.

EXCEPTION: This rule does not apply where access to the supporting structure is limited by a fence meeting the height requirements of Rule 110A1.

NOTE: (text of the existing note is unchanged)

**Vote on Subcommittee Recommendation for Motion 3:**

Affirmative: Bednarz, Bleakley, Davidchik, Engdahl, Henry, Hooper, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Stevens, Tomaseski, Washburn

Negative: Clapp, Schwarz, Howard

Abstain:

**Rule 217A2**

**CP 2253**

The proposer withdrew the proposal since it is a duplicate of CP 2252: CP 2253 is not to appear in the Preprint.

**Rule 217A2a**

**CP 2321**

**Subcommittee Recommendation:** Accept, see CP 2252.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 217B and Rule 234C3**

**IR 509**

**Subcommittee Recommendation:** No action needed, see CP 2215.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 220B2e**

**IR 492**

**CP 2389 by SC 4**

**Subcommittee Recommendation:** Accept.

Revise Rule 220B2e as follows:

Such supply circuits in cable meeting the requirements of Rules 230C1, 230C2, or 230C3 may be installed below communication attachments, with not less than ~~600 mm~~ (2 ft) 400 mm (16 in) vertical separation between the supply cable and the lowest communication attachment. Communication circuits other than those used in connection with the operation of the supply circuits shall not be carried in the same cable with such supply circuits.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 220D, E**

**IR 514**

**Subcommittee Recommendation:** Refer to Working Group 4.8.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 224A3a**  
**CP 2323**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 224A2c, A3c, Exceptions**  
**CP 2322**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 224B**  
**CP 2374**

**Subcommittee Recommendation:** Refer to WG 4.8, requesting that they bring their recommendation (for this CP only) back to this subcommittee by March 1, 1999, so action may be taken prior to publication of the Preprint.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**IR 485**

**Definition: Communication Line**

**CP2395**

**Subcommittee Recommendation:** Refer to WG 4.8 and, if necessary, come back to this subcommittee with a proposal by March 1, 1999, so action can be taken and published in the Preprint.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 224B2**

**TIA 97-1**

**CP 2387 by SC 4**

**Subcommittee Recommendation:** Accept the changes to Rule 224B2 that were made in TIA 97-1.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 230**

**CP 2216**

**Subcommittee Recommendation:** Accept items 1, 2, and 3.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 230A**

**CP 2388 by SC4**

**Subcommittee Recommendation: Accept.**

**Subcommittee Comment:** This action is taken to correct the misunderstanding of IR 159.

Revise the beginning of Rule 230A as follows:

A. Development and Application of Clearances

This section covers all clearances, including climbing spaces, involving overhead supply and communication lines. Rules 232 and 234 contain tables of required clearances from overhead facilities to land and water areas and to structures used, occupied or worked upon by members of the public. These clearances were developed from the methodology, reference dimensions and clearance building blocks shown in Appendix A. This accepted good practice is based upon the results of almost a century of application of NESC clearances in the field.

The clearances specified in Section 23 apply to the vast majority of overhead installations. It is exceptionally rare that local conditions are not specified in these rules. However, the clearances specified in Section 23 do not cover unusual activities or use of oversized equipment, such as may occur at construction sites. If such a circumstance occurs where the known dimensions of conflicting activity exceed the Reference Dimensions of Table A-2a or Table A-2b, Rule 012C requires accepted good practice to be met. Although Appendix A is not a mandatory section of the NESC, Rule 012C may be met by adding the applicable M&E values from Table A-1 to the known dimensions of conflicting activity to develop the clearance that is appropriate for the unspecified condition. This methodology may be used to determine applicable clearances for unusual situations.

NOTE: The NESC recognizes that activities of construction personnel and other workers in close proximity to existing supply lines are governed by Occupational Safety and Health Administration (OSHA) regulations contained in 29 Code of Federal Regulations Parts 1910 and 1926. These regulations require construction personnel and other workers to maintain appropriate working clearances of personnel, tools, and equipment from supply lines. Also,

most states have similar requirements applicable to individuals working in close proximity to supply lines.

The remainder of the present rule remains unchanged.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Howard, Johnson, Komassa, Oswald, Reding, Renowden, Ruehl, Schwarz, Tomaseski, Washburn

Negative: Hooper, Olinick, Martineau, Stevens

Abstention: Mistry

**Explanation of Vote:**

Bohlc:

I accept this in principle, but believe that improvements could be made in the language.

Clapp:

I think the next to the last sentence of the note should continue as follows: “unless and until the construction personnel or other workers are able to make satisfactory arrangements with the owner of the lines to have the lines (a) covered with appropriate temporary insulation, (b) de-energized and visibly grounded at or near the work site, or (c) relocated to allow the construction personnel to work closer to the original line location. It is recognized by OSHA that covering, de-energization and grounding, or relocation of the lines may not be practical; in such cases, it is recognized that it is the responsibility of the construction personnel to change methods, procedures, tools, or equipment to maintain appropriate clearances from the lines.”

Hooper:

I believe that SC 4 intended to replace the existing NOTE with the new NOTE shown in the change proposal. This is not clear in the minutes.

Olinick, Martineau, Stevens:

The proposal is wordy, which may result in misinterpretation. We support references to OSHA requirements at construction sites.

**Rule 230C3 and Rule 235E1**

**IR 515**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:  
Abstention:

**Rule 230F**  
**CP 2310**

**Subcommittee Recommendation:** Reject due to redundancy.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Abstention:

**Rule 230F**  
**CP 2311**

**Subcommittee Recommendation:** Reject. See Rule 224A.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 230F1b**  
**IR 497**

**Subcommittee Recommendation:** No action required - covered in present Code.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 230G**  
**CP 2254**

**Subcommittee Recommendation:** Reject on the basis that it is unnecessary.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Olinick, Oswald, Reding, Renowden, Ruehl, Stevens, Tomaseski, Washburn

Negative: Clapp, Schwarz, Bohlk, Mistry

Abstention:

**Rule 230H**

**CP 2255**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 231A; new 420Q**

**CP 2191**

**Subcommittee Recommendation:** Reject because it is too limited and too restrictive.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention: Bohlk

**Explanation of Vote:**

Bohlc: This could be a conflict in farming areas in rural America. On the other hand I believe it would be in the best interest of line workers.

**Rule 231A**

**CP 2324**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 231B**

**CP 2202**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Present language was proposed by the Federal Department of Transportation. Data from the Roadside Design Guide (copyright 1996) by the American Association of State Highway and Transportation Officials indicate that fatalities caused by contact with utility poles are not differentiable from those associated with guard rails or culverts/ditches. Further, fatalities due to trees or shrubs are over twice the number due to pole contacts. While Rule 231B specifies values, pole locations for the most part are set by the governing authority.

**Table 1.1 First Harmful Event—Fixed Object Fatalities by Object Type**

<b>Fixed Object</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>
Tree/Shrub	3,329	3,296	3,252	3,236	3,053
Utility Pole	1,476	1,418	1,277	1,329	1,129
Culvert/Ditch	1,473	1,349	1,501	1,401	1,363
Guardrail	1,385	1,288	1,249	1,204	1,139
Embankment	1,360	1,332	1,334	1,187	1,138
Curb/Wall	891	860	843	774	752
Other Fixed Objects	682	696	731	634	619
Sign of Light Support	576	594	578	528	488
Bridge/Overpass	553	519	582	545	545
Other Pole/Support	501	449	450	411	388
Fence	482	448	505	500	455
Concrete Barrier	201	249	236	217	214
Building	106	98	97	111	89
Impact Attenuator	15	20	28	16	20
<b>Totals</b>	<b>13,030</b>	<b>12,616</b>	<b>12,663</b>	<b>12,093</b>	<b>11,392</b>

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**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 231B**

**CP 2231**

**Subcommittee Recommendation:** Reject. See CP 2202.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 231B1**

**CP 2256**

**Subcommittee Recommendation:** Accept in principle.

Keep present Rule 231B1 and add the following sentence to the end of the rule:

For paved or concrete swale-type curbs, such facilities shall be located behind the curb.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 231B4**

**CP 2218**

**Subcommittee Recommendation:** Reject. The proposed language is confusing.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 232A**

**CP 2351**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Present Code language is correct. The intent of the Rule is that wires, conductors, and cables will have greater clearances than the values specified during normal operation to assure that the specified values will be met under the limiting design condition. See Rule 012A.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 232B2**

**CP 2325**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 232B3**

**CP 2326**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 232B4, Rule 236D, and Rule 237F**  
**CP 2377**

**Subcommittee Recommendation:** Accept as modified.

Rewrite Rule 232B4a as follows:

a. The vertical clearance of street and area lighting luminaires shall be not less than that shown in Table 232-2. For this purpose, grounded luminaire cases and brackets shall be considered as effectively grounded equipment cases; ungrounded luminaire cases and brackets shall be considered as a rigid live part of the voltage contained.~~All exposed ungrounded conductive parts of luminaires and their supports that are not insulated from current-carrying parts shall be maintained at not less than 500 mm (20 in) from the surface of their supporting structure.~~

~~EXCEPTION 1: This may be reduced to 125 mm (5 in) if located on the side of the structure opposite the designated climbing space.~~

~~EXCEPTION 2: This does not apply where the equipment is located at the top or other vertical portion of the structure that is not subject to climbing.~~

In Rule 236D, the existing paragraph under the present rule becomes Rule 236D1, and the proposed addition to the rule becomes new Rule 236D2 as follows:

**D. Location of Equipment Relative to Climbing Space**

1a. All supply and communication equipment such as transformers, regulators, capacitors, cable terminals (potheads), amplifiers, loading coils, surge arresters, switches, etc., when located below conductors or other attachments, shall be mounted outside of the climbing space.

2b. All exposed grounded conductive parts....etc.

(Remainder of new Rule 236D2 including the two exceptions are accepted as proposed.)

In Rule 237F insert the words "luminaires and their support brackets" instead of the proposed insertion. See CP 2118 under Rule 237F.

**Vote on Subcommittee Recommendation:**

Published December 10, 1998

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Olinick

Abstention:

### **Explanation of Vote:**

Olinick: The first sentence of proposed Rule 232B4a is new and adds vertical clearance requirements for street and area lighting luminaires, yet there is no supporting evidence presented to show that vertical clearances are needed. Vertical clearances may impact lighting designs by restricting heights above ground.

The second sentence of the proposal conflicts with the first sentence in that "brackets" are also included, yet not mentioned in the first sentence.

Table 232-2 has historically been directed to unguarded, rigid, live parts (i.e. transformer bushings). Now, street lighting luminaires and brackets are added to this Table without any reasonable justification.

### **Table 232-1**

#### **CP 2112**

**Subcommittee Recommendation:** Accept as modified.

Rewrite the title of Row 8 of Table 232-1 as follows:

8. ~~Public or private land and water~~ Established boat ramps and associated rigging areas; areas posted by sign(s) for rigging or launching sailboats.

The revised title of Row 8 of Table 232-1 would then read as follows:

8. Established boat ramps and associated rigging areas; areas posted by sign(s) for rigging or launching sailboats.

### **Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bohlk

Abstention:

### **Explanation of Vote:**

Bohlik: I believe that other than "established" areas should be covered. The areas should be expanded to include established, known and declared.

**IR488**

**Subcommittee Recommendation:** See CP2112.

**Table 232-1**

**CP 2303**

**Subcommittee Recommendation:** Reject as too restrictive, and time proven footnotes would be deleted. Footnote 10 allows pole guys at 9.5 ft, which is a safe clearance.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Table 232-1, Table 232-3**

**CP 2212**

**Subcommittee Recommendation:** Accept

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Explanation of Vote:**

Bleakley: This CP should also include Table A-2a in Appendix A.

**Table 232-1, FN 17**

**CP 2245**

The proposer withdrew the CP since it is a duplicate of CP 2189: Not to appear in the Preprint.

**Table 232-1, Item 7, FN 17**

**CP 2229**

**Subcommittee Recommendation:** Accept in principle. See CP 2189.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 232-1, FN 17**

**CP 2189**

**Subcommittee Recommendation:** Accept.

(Secretary's Note: See page 21 for placement of Footnotes in Table 232-1 by CP 2189: Table 232-1 having metric values is shown.)

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 232-1, m and ft, FN 13**

**CP 2327**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 232-1, m and ft, FN 13**

**CP 2119**

**Subcommittee Recommendation:** Accept. See CP 2327.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 232-1, FN 13**  
**CP 2172**

**Subcommittee Recommendation:** Reject. See CP2327.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Changes made to Footnote references by CP 2189:**

**m**

**Table 232-1**

**Vertical Clearance of Wires, Conductors, and Cables Above Ground, Roadway, Rail or Water Surfaces<sup>25</sup>**

(Voltages are phase to ground for effectively grounded circuits and those other circuits where all ground faults are cleared by promptly de-energizing the faulted section, both initially and following subsequent breaker operations. See the definitions section for voltages of other systems. See Rules 232B1, 232C1a, and 232D4.)

Nature of surface underneath wires, conductors, or cables	Insulated communication conductors and cable; messengers; surge-protection wires; grounded guys; ungrounded guys exposed to 0 to 300 V <sup>11,15</sup> ; neutral conductors meeting Rule 230E1; supply cables meeting Rule 230C1	Noninsulated communication conductors; supply cables of 0 to 750 V meeting Rules 230C2 or 230C3	Supply cables over 750 V meeting Rules 230C2 or 230C3; open supply conductors, 0 to 750 V; ungrounded guys exposed to over 300 V to 750 V <sup>14</sup>	Open supply conductors, over 750 V to 22 kV; ungrounded guys exposed to 750 V to 22 kV <sup>14</sup>	Trolley and electrified railroad contact conductors and associated span or messenger wires	
	(m)	(m)	(m)	(m)	0 to 750 V to ground (m)	Over 750 V to 22 kV to ground (m)
<b>Where wires, conductors, or cables cross over or overhang</b>						
1. Track rails of railroads (except electrified railroads using overhead trolley conductors) <sup>2,16,20,22</sup>	7.2	7.3	7.5	8.1	6.7 <sup>4</sup>	6.7 <sup>4</sup>
2. Roads, streets, and other areas subject to truck traffic <sup>24,23</sup>	4.7	4.9	5.0	5.6	5.5 <sup>5</sup>	6.1 <sup>5</sup>
3. Driveways, parking lots, and alleys	4.7 <sup>7,13</sup>	4.9 <sup>7,13</sup>	5.0 <sup>7</sup>	5.6	5.5 <sup>5</sup>	6.1 <sup>5</sup>
4. Other land traversed by vehicles, such as cultivated, grazing, forest, orchard, etc. <sup>25</sup>	4.7	4.9	5.0	5.6	---	---
5. Spaces and ways subject to pedestrians or restricted traffic only <sup>9</sup>	2.9	3.6 <sup>8</sup>	3.8 <sup>8</sup>	4.4	4.9	5.5
6. Water areas not suitable for sailboating or where sailboating is prohibited <sup>19,21</sup>	4.0	4.4	4.6	5.2	---	---
7. Water areas suitable for sailboating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with an unobstructed surface area of <sup>17,18,19,20,21</sup>						
a. Less than 8 ha	5.3	5.5	5.6	6.2	---	---
b. Over 8 to 80 ha	7.8	7.9	8.1	8.7	---	---
c. Over 80 to 800 ha	9.6	9.8	9.9	10.5	---	---
d. Over 800 ha	11.4	11.6	11.7	12.3	---	---

**Table 232-1, FN 9, FN 21 & new FN  
CP 2171**

**Subcommittee Recommendation:** Accept in part: Accept changes to FN 9 and FN 21. Reject proposed new FN XX because it was handled elsewhere. Reject the proposal to combine English and metric in this table.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Table 232-2, m and ft  
CP 2328**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Bednarz  
Abstention:

**Explanation of Vote:**

Bednarz:

Footnote 7 is contingent upon "...such cases do not unduly obstruct a walkway" and properly refers to Item 1.d., "Spaces and ways subject to pedestrian or restricted traffic only."

Footnote 7 allows the identified equipment to be positioned at lower levels on structures that are located away from the traffic identified in Item 1.a "Roads, streets, and other areas subject to truck traffic."

A control box or similar equipment positioned under 15 ft in height and located slightly more than 6 inches from the inside of a curb (traffic side), as would be allowed under Rule 231B1, is a hazard for passing vehicles, for employees attempting to access such equipment, and for any garbage men riding on the back of their trucks and looking around the side.

This change proposal appears to compromise safety to achieve convenience.

**Table 232-2, m and ft**  
**CP 2113**

**Subcommittee Recommendation:** Accept. See CP 2328.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bednarz

Abstention:

**Explanation of Vote:**

Bednarz: See comment under CP 2328.

**Table 232-2**  
**CP 2142**

**Subcommittee Recommendation:** Accept as modified

Change Title of Rule 232B to read as follows:

Clearance of Wires, Conductors, Cables, ~~and~~ Equipment and Support Arms Mounted on Supporting Structures

Change Title of Rule 232B3 to read as follows:

Clearance to Support Arms and Equipment Cases

Change Rule 232B3 to read as follows:

The vertical clearance of equipment cases ~~above ground or roadway surfaces~~, support arms, platforms and braces that extend beyond the surface of the structure shall be not less than that shown in Table 232-2. These clearances do not apply to internal structural braces for latticed towers.

Revise the heading of the first column of numbers in Table 232-2 to read as follows:

Nonmetallic or effectively grounded support arms and effectively grounded equipment cases

Revise the title of Table 232-2 to read as follows:

Vertical Clearance of Equipment Cases, Support Arms, Platforms, Braces and Unguarded Rigid Live Parts Above Ground, Roadway, or Water Surfaces

**Vote on Subcommittee Recommendation:**

NESC Subcommittee 4 Minutes of Meetings October 5-8, 1998

Published December 10, 1998

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention: Olinick

### **Explanation of Vote:**

Olinick:

The intent of SC4 was to develop a vertical clearance requirement for "support arms, platforms, and associated braces." The subcommittee and Change Proposal both stated that these support arms and platforms should not be mounted on a pole lower than 15 ft., similar to requirements in Rule 231B1.

The proper solution would be to add a new Rule to Rule 232B (or to Rule 232B3), such as Rule 232B5, which would state:

Title: "Clearance to Support Arms, Platforms and Associated Braces"

"The vertical clearance of support arms, platforms, and associated braces above ground, roadway, or water surfaces shall be not less than 15 feet."

### **Rule 233A1a(2) and Rule 234A2**

#### **CP 2378**

**Subcommittee Recommendation:** Accept as modified

#### **Vote on Subcommittee Recommendation:**

Use a superscript on the 2 in the English units "ft<sup>2</sup>" to indicate ft<sup>2</sup> in the text. Remove the overstrike from the strikethrough portions of the proposed exception.

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

### **Rule 233B**

#### **CP 2257**

**Subcommittee Recommendation:** Reject. Refer to the 1990 rationalization of clearance text; this was not a typographical error.

#### **Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Figure 233-2**  
**CP 2188**

**Subcommittee Recommendation:** Reject, since the Rule cannot be properly explained. It is conflicting and overly complicated.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Table 233-1**  
**CP 2174**

**Subcommittee Recommendation:** Reject. This is not new material; it was addressed by WG 4.6 (See CP 2010 in the 1997 Preprint Proposals, page 116.). The subcommittee cannot put a Rule into effect to compensate for users who are breaking another Rule.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Table 233-1**  
**CP 2375**

**Subcommittee Recommendation:** Reject. See CP 2174.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Table 233-1, FN2**

**CP 2173**

**Subcommittee Recommendation:** Accept as modified.

Revise FN2 of Table 233-1, m and ft, as follows:

<sup>2</sup> The clearance of communication conductors and their guy, span, and messenger wires from each other in locations where no other classes of conductors are involved may be reduced by mutual consent of the parties concerned., ~~subject to the approval of the regulatory body having jurisdiction, except for fire alarm conductors and conductors used in the operation of railroads, or where one set of conductors is for public use and the other used in the operation of supply systems.~~

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234A1**

**CP 2352**

**Subcommittee Recommendation:** Reject. See CP 2351.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234A2**  
**CP 2378**

**Subcommittee Recommendation:** See action taken under Rule 233A1a(2).

**Rule 234B1 Exception**  
**CP 2143**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234B2b(1); Table 235-5, Row 2c(1) and Footnote 5; Table 235-5, Row 2c(2);**  
**Rule 236E Exception 1**  
**CP 2217**

**Subcommittee Recommendation:** Accept in part and as modified. Add the words "and grounded" after "de-energized" in Rule 234B2 Exception 2, b(1); Table 235-5, Row 2c(2) and Footnote 5; Rule 236E Exception 1.

**A proposed new definition of de-energized is to be forwarded to Subcommittee 1 for review, to read as follows:**

De-energized: Disconnected from all sources of electrical supply by opening switches, disconnectors, jumpers, taps, or other means of electrical supply. *Synonym: disconnected.*

NOTE: The de-energized circuit could be electrically charged through induction from energized circuits in proximity to it, particularly if the circuits are parallel.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234C1a**  
**CP 2329**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Table 234-1**  
**CP 2175**

**Subcommittee Recommendation:** Reject. It was an intentional decision by 1990 WG 4.2 to recognize that historical clearances worked well.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Clapp  
Abstention:

**Table 234-1**  
**CP 2285**

**Subcommittee Recommendation:** Accept in principle. The term "readily accessible to pedestrians" is a term of art used throughout the Code and should be retained.

Rather than accept the changes originally proposed in this CP, the following changes are proposed:

Create a new Row 2a(1) titled "To portions that are readily accessible to pedestrians" using the same clearance values and footnotes as Row 1a(3).

Create Row 2a(2) titled "To portions that are not readily accessible to pedestrians" using the same clearance values and footnotes as present Row 2a.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Hooper

Abstention:

**Explanation of Vote:**

Hooper: the proposed wording does not accomplish the subcommittee's intended purpose.

**Table 234-1a, -2a**  
**CP 2132**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:**

The experience of the members of Subcommittee 4 is that the majority of accidents involve people moving or carrying extended ladders, not personnel working from a ladder. One of these accidents involved hitting a line more than 40 feet from the building. See the discussion of Rule 234C in the NESC handbook.

The change proposed by the submitter is not practical in many locations due to narrow sidewalks, driveway locations, and similar constraints.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 234-1 (m) Footnotes**  
**CP 2331**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 234-1, FN 14**

**CP 2176**

**Subcommittee Recommendation:** Reject. This proposed change is unduly complicated. Moreover, it is an attempt to introduce design material into a safety performance Code.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bohlk, Davidchik, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bleakley, Clapp, Engdahl

Abstention:

**Rule 234C3d**

**CP 2114**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Rule 234C3e (New)**

**CP 2125**

**Subcommittee Recommendation:** Reject. See action taken on CP 2330 below.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234C3**  
**CP 2330**

**Subcommittee Recommendation:** Reject. Service drops at 22 kV using bare or covered conductors should be protected from contact by unauthorized personnel.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bleakley

Abstention:

**Explanation of Vote:**

Bleakley: I agree with the rejection of 22-kV services, however we did nothing to cover services over 750 volts. This CP could be modified to cover the omission.

**Rule 234C3b**  
**IR 500**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234C3d(1), Exception 1**  
**CP 2144**

**Subcommittee Recommendation:** Accept. Change the word “open” to “bare” in the supporting comment. Also see additional changes made under CP 2114.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234C4**

**IR 495**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 234D**

**CP 2145**

**Subcommittee Recommendation:** Reject. The proposal conflicts with the intentions of the working group in the development of the 1990 edition.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention:

**Table 234-2**

**CP 2177**

**Subcommittee Recommendation:** Reject. See CP 2175.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp  
Abstention:

**Table 234-2**  
**CP 2127**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 234-2**  
**CP 2126**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 234-2 (m and ft), FN7**  
**CP 2333**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:  
Abstention:

**Table 234-2 (m), FN8**  
**CP 2332**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:  
Abstention:

**Rule 234F1**  
**CP 2146**

**Subcommittee Recommendation:** Accept as modified.

Revise Rule 234F1 as follows:

1. Grain Bins Loaded by Permanently Installed Augers, Conveyers, or Elevator Systems

All portions of grain bins that are expected to be loaded by the use of a permanently installed auger, conveyer, or elevator system may be considered as a building or other installation under Rule 234C for the purpose of determining appropriate clearances of wires, conductors, cables, and rigid live parts, except that a vertical clearance above the bin of not less than 5.5 m (18 ft) for ~~voltages~~ wires, cables, and open supply conductors of 0 to 22 kV shall be maintained above each probe port and a horizontal clearance of not less than 4.6 m (15 ft) shall be maintained between an open supply conductor and a grain bin as shown in Fig 234-4a.

EXCEPTION: Clearances of the following items more than 18 ft from probe ports shall be not less than those required by Rule 234C for clearances from buildings:

- (1) Support arms; effectively grounded equipment cases
- (2) Insulated communication conductors and cables, messengers, surge-protection wires, grounded guys, neutral conductors meeting Rule 230E1, and supply cables meeting Rule 230C1
- (3) Supply cables of 0 to 750 V meeting Rules 230C2 or 230C3

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Hooper  
Abstention:

**Explanation of Vote:**

Hooper: The proposed Exception is not valid because it excepts items not covered in the rule. I prefer CP 2334, which was accepted in principle.

**Rule 234F1**

**CP 2334**

**Subcommittee Recommendation:** Accept in principle. See CP 2146.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Figure 234-4(b)**

**CP 2335**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 234F2a, Exception 3**

**IR 491**

**Subcommittee Recommendation:** No action needed.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C**  
**CP 2147**

**Subcommittee Recommendation:** Accept in principle.

Revise Rule 235C as follows:

In Rule 235C2a(1) “conductors” becomes “line wires, conductors and cables” to read as follows:

a. Voltage Related Clearances

(1) For voltages between 50 and 814 kV, the clearance between line wires, conductors, and cables ~~conductors~~ of different circuits shall be increased 10 mm (0.4 in) per kilovolt in excess of 50 kV.

In Rule 235C2b(1) “conductors” becomes “wires, conductors and cables” in the first sentence; and “conductor” in the last sentence becomes “wire, conductor or cable” to read as follows:

b. Sag Related Clearances

(1) Line wires, conductors, and cables ~~conductors~~ supported at different levels.... ....The lower wire, conductor or cable ~~conductor~~ shall be at final sag under the same ambient conditions as the upper wire, conductor or cable ~~conductor~~, without electrical loading, and without ice loading.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Hooper, Howard, Johnson, Komassa, Oswald, Renowden, Ruehl, Schwarz, Washburn

Negative: Henry, Martineau, Mistry, Olinick, Reding, Stevens, Tomaseski

Abstention:

**Explanation of Vote:**

Henry, Mistry, Olinick, Reding, Tomaseski: I object to including the word “wires” in the group.

Martineau, Stevens, Tomaseski: I would like to see a task force set up to address this issue.

A **Task Group** was formed by the subcommittee to review each rule in Section 23 to determine whether the rule applies to wires, conductors or cables or any combination of the three terms, starting with Rules 232, 233, 234, 235 and 239.

The task group will consist of Amrhyn, Engdahl, Gunter, LaBrake, and Olinick.

**Rule 235C1, Exception 1**  
**CP 2246**

**Subcommittee Recommendation:** Refer to Subcommittee 5.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Tomaseski, Washburn

Negative: Davidchik, Engdahl, Mistry, Stevens

Abstention:

**Explanation of Vote:**

Davidchik, Engdahl, Mistry, Stevens: This is a design issue.

**Rule 235C1, Exception 1**  
**IR 506**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C2**  
**CP 2128**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

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Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C2b**

**CP 2115**

**Subcommittee Recommendation:** Accept in Principle. See CP 2336.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C2b**

**CP 2336**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C2b(1)**

**CP 2190**

Withdrawn by the proposer: Not to appear in the Preprint.

**Rule 235C2b(1)**

**CP 2148**

**Subcommittee Recommendation:** Accept in part as modified.

Accept only that part of the change proposal, as modified, that deals with the exception under Rule 235C2b(1) and reject the remainder of the proposal. The modified exception is to read as follows:

EXCEPTION: ~~This rule does not apply to conductors of the same utility when the conductors are the same size and type, and are installed at the same sag and tension.~~The difference in ice loading does not apply to conductors of the same utility when all of the following apply:

- (a) the conductors are the same size and type,
- (b) the span is less than 450 ft,
- (c) the conductors are installed at the same sag and tension, and
- (d) the clearance at the structure is 4.0 ft or greater.

**Vote on Subcommittee Recommendation:**

Affirmative: Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Howard, Johnson, Komassa, Oswald, Reding, Renowden, Washburn  
Negative: Bednarz, Martineau, Olinick, Tomaseski  
Abstention: Hooper, Mistry, Schwarz, Stevens

**Explanation of Vote:**

Bednarz, Hooper, Martineau, Mistry, Olinick, Schwarz, Stevens, Tomaseski: This needs further study.

**Rule 235C2b(1)(a)**  
**CP 2129**

**Subcommittee Recommendation:** Accept as modified.

Modify the proposed new exception to read as follows:

EXCEPTION 2: When all parties involved are in agreement, for supply conductors of different utilities, vertical clearance at any point in the span need not exceed 75% of ~~that~~ the values required at the supports for the same utility by Table 235-5.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 235C2b(1)(a) Exception/Table 238-1  
CP 2138**

**Subcommittee Recommendation:** Accept as modified.

Revise Rule 235C2b(1)(a) Exception as shown in the change proposal.

Revise Table 238-1, Footnote 1 as follows:

<sup>1</sup>Where non-current-carrying parts of supply equipment are effectively grounded and the associated neutral meeting Rule 230E1 is bonded to communication messengers at intervals meeting Rule 92C, consistently throughout well-defined areas and where communication is at lower levels, clearances may be reduced to 0.75m (30 in).

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Olinick

Abstention:

**Explanation of Vote:**

Olinick:

Revise Rule 92C, not the existing Footnote 1 of Table 238-1, if the intent is to bond communication conductor and cables to supply equipment or supply conductors.

Martineau:

The addition of the word “supply” should be applied to the “...associated neutral meeting Rule 230E1” instead of the word “equipment” so that both the supply and communication equipment are required to be effectively grounded, and the neutral and messenger(s) bonded at intervals...etc.

**Rule 235C2b(1)(a) Exception and Table 238-1 FN 1  
CP 2392 by SC 4**

**Subcommittee Recommendation:** Accept.

Revise Rule 235C2b(1)(a) Exception as follows:

Exception: Neutral conductors meeting Rule 230E1 and supply cables meeting Rule 230C1 (including their support brackets) running above and parallel to communication cables where the supply neutral or messenger is bonded to the communication messenger, may have a clearance of 300 mm (12 in) at any point in the span provided that a clearance of 0.75 m (30

in) is maintained between the supply conductors and cables and the communication cables at the supporting poles.

Revise Table 238-1 FN1 as follows:

<sup>1</sup> Clearances for ~~Where~~ non-current carrying parts of equipment that are effectively grounded consistently throughout well-defined areas and brackets supporting neutral conductors meeting Rule 230E1 or supply cables meeting Rule 230C1 only may be reduced to 0.75 m (30 in) where communication is at lower levels. ~~clearances may be reduced to 0.75 m (30 in).~~

The revised Table 238-1 FN1 will then read as follows:

<sup>1</sup> Clearances for non-current carrying parts of equipment that are effectively grounded consistently throughout well-defined areas and brackets supporting neutral conductors meeting Rule 230E1 or supply cables meeting Rule 230C1 only may be reduced to 0.75 m (30 in) where communication is at lower levels.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention: Renowden

**Explanation of Vote:**

Renowden: I do not currently have sufficient understanding of these changes to vote.

**Rule 235C2b**  
**IR 474**

**Subcommittee Recommendation:** No action required.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235C4 and 238E**

**CP 2167**

**Subcommittee Recommendation:** Accept as modified.

Accept the change proposal as modified to create new Rules 235C4 and 238E, using the same text in both rules. The text of the new rules is shown below, having the modifications made by the subcommittee:

**Communication Worker Safety Zone**

The clearance specifications of Rules 235C and 238 create a *communication worker safety zone* between the facilities located in the supply space and facilities located in the communication space, both at the structure and in the span between structures. Except as allowed by Rules 238C, ~~and 238D~~ and 239, no supply or communication facility shall be located in the communication worker safety zone.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Abstention:

**Table 235-5, FN2**

**CP 2178**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 235-5, FN6**

**CP 2116**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Table 235-5**  
**IR 504**

**Subcommittee Recommendation:** No action required. See CP 2167.

**Table 235-5, FN6**  
**IR 501**

**Subcommittee Recommendation:** No action required. See CP 2116.

**Table 235-5**  
**IR 512**

**Subcommittee Recommendation:** No action required.

**Table 235-6**  
**CP 2179**

**Subcommittee Recommendation:** Reject. There is no perceived problem and we have difficulty in staffing a working group at this time.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Clapp  
Abstention:

**Explanation of Vote:**

Clapp: No comment.

**Rule 235H (New) and Table 235-6**  
**IR 510**  
**CP 2390 by SC 4**

**Subcommittee Recommendation:** Accept.

**Subcommittee Comment:** Subcommittee 8 should review this issue for working clearances near such antennas. Subcommittee 2 should review this issue regarding grounding of equipment associated with such antennas.

Proposed New Rule 235H:

Clearances in Any Direction From Supply Line Conductors to Communication Antennas in the Supply Space Attached to the Same Supporting Structure

1. Communication Antenna  
The clearance between a communication antenna operated at a radio frequency voltage of 0 to 750 V and a supply line conductor shall be not less than the value given in Table 235-6, row 1b.  
Note: The antenna functions as a rigid, vertical or lateral open wire, communication conductor.
2. Equipment Case That Supports a Communication Antenna  
The clearance between an equipment case that supports a communication antenna and a supply line conductor shall be not less than the value given in Table 235-6, Row 4a.
3. Vertical or Lateral Communication Conductors and Cables Attached to a Communication Antenna  
The clearance between a supply line conductor and the vertical or lateral communication conductor and cable attached to a communication antenna shall be not less than the value given in Rule 239.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 235E2**

**CP 2248**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** The main issue raised by the CP is concerned with the conductors, and suspension insulators, swinging into the supporting structure. This will typically result in the line relaying (tripping) out of service. Under hurricane wind and other extreme wind events, this is generally unavoidable due to the dynamic and chaotic nature of the event and poses no public safety clearance issues.

As the CP indicated, clearances from Rule 234 are sufficient to limit practical problems to buildings, even in storm winds.

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For those utilities that choose to attempt to prevent trip outs for this level of natural event, it is a reliability and a design issue, not a public safety one.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Clapp  
Abstention: Bohlk

**Rule 235F5**  
**CP 2259**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Abstention:

**Rule 235**  
**IR 487**

**Subcommittee Recommendation: No action required.**

**Rule 237D1**  
**CP 2260**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Rule 237F**  
**CP 2118**

**Subcommittee Recommendation:** Accept

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Figure 237-1**  
**CP 2166**

**Subcommittee Recommendation:** Accept

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 238D**  
**CP 2149**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** See CP 2118.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Clapp

Abstention: Bohlk

**Rule 238E and Rule 235H (New)**  
**CP 2168**

**Subcommittee Recommendation:** Accept as modified.

Add new Rule 235H that will include the title and the first two numbered items of the change proposal, modified to read as follows:

**H. Clearance and Spacing Between Communication Conductors, Cables, and Equipment**

1. The spacing between messengers supporting communication cables should be not less than 300mm (12 in) except by agreement between the parties involved.
2. The clearances between the conductors, cables, and equipment of one communication utility to those of another, ~~at the structure or in midspan~~ anywhere in the span, shall be not less than 100 mm (4 in), except by agreement between the parties involved.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Tomaseski, Washburn

Negative:

Abstention: Engdahl, Stevens

**Explanation of Vote:**

Stevens: I do not believe this is a safety issue.

**Table 238-1, FN 1**  
**CP 2138**

**Subcommittee Recommendation:** See action under CP 2138, Rule 235C2b(1a) Exception.

**Rule 239A1**  
**CP 2261**

**Subcommittee Recommendation:** Accept in principle.

Add a new Rule 239A6 to read as follows:

Where guarding and protection are required by other rules, either conduit or U-guards may be used. A backing plate shall be used with a U-guard unless the U-guard fits tightly to the supporting structure surface.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:  
Abstention:

**Rule 239D**  
**IR 511**

**Subcommittee Recommendation:** No action required. See CP 2261.

**Rule 239E2a(1)**  
**CP 2337**

**Subcommittee Recommendation:** Accept as modified.

Revise Rule 239E2a as follows:

- a. General  
If open ~~line~~wire conductors are within 1.20 m (4 ft) of the pole, vertical conductors shall be run in one of the following ways:

Revise Rule 239E2a(1) as follows:

- (1) The ~~clearance~~spacing between open vertical conductors and pole center shall be not less than that given in Table 239-2 within the zone specified in the table.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention: Bohlk

**Table 239-2 (m and in)**  
**CP 2339**

**Subcommittee Recommendation:** Accept.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:

Abstention: Bohlk

**Explanation of Vote:**

Bohlc: I believe that the values in Table 239-2 should show clearances to the face of the pole.

**Table 239-1 (m and in)**  
**CP 2338**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, , Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention: Clapp

**Rule 239G1, Exception 2**  
**CP 2150**

**Subcommittee Recommendation: Accept.**

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 239G**  
**IR 484**

**Subcommittee Recommendation: No action required.**

**Rule 239H**

**CP 2376**

**Subcommittee Recommendation:** Accept as modified.

Add new Exception 2 to Rules 239H1, 239H2, and 239H3; revise Exception 1 in these Rules to delete “metallic” and “nonmetallic”, as follows:

1. Metal-Sheathed Communication Cables

Vertical runs of metal-sheathed communication cables shall be covered with suitable nonmetallic material, where they pass trolley feeders or other supply line conductors. This nonmetallic covering shall extend from a point 1.00 m (40 in) above the highest trolley feeders or other supply conductors, to a point 1.80 m (6 ft) below the lowest trolley feeders or other supply conductors, but need not extend below the top of any mechanical protection that may be provided near the ground.

*EXCEPTION 1:* Communication cables may be run vertically on the pole through space occupied by railroad signal supply circuits in the lower position, as permitted in Rule 220B2, without ~~nonmetallic~~ covering within the supply space.

*EXCEPTION 2:* Covering is not required in the supply space on metallic or concrete supporting structures.

2. Communication Conductors

Vertical runs of insulated communication conductors shall be covered with suitable nonmetallic material, to the extent required for metal-sheathed communication cables in Rule 239H1, where such conductors pass trolley feeders or supply conductors.

*EXCEPTION 1:* Communication conductors may be run vertically on the structure through space occupied by railroad-signal supply circuits in the lower position, as permitted in Rule 220B2, without ~~metallic~~ covering within the supply space.

*EXCEPTION 2:* Covering is not required in the supply space on metallic or concrete supporting structures.

3. Communication Grounding Conductors

Vertical communication grounding conductors shall be covered with suitable nonmetallic material between points at least 1.80 m (6 ft) below and 1.00 m (40 in) above any trolley feeders or other supply line conductors by which they pass.

*EXCEPTION 1:* Communication grounding conductors may be run vertically on the structure though space occupied by railroad-signal supply circuits in the lower position, as permitted in Rule 220B2, without ~~nonmetallic~~ covering within the supply space.

*EXCEPTION 2:* Covering is not required in the supply space on metallic or concrete supporting structures.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:  
Abstention:

**Part 2**  
**CP 2169**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Subcommittee members would prefer to work individually with the FAA or other agencies to resolve issues.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative: Clapp  
Abstention:

**Part 2**  
**CP 2205**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** SC 4 does not see a clear need to change the clearance values in Part 2.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn  
Negative:  
Abstention:

**Section 23**  
**CP 2372**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** See Rule 230I.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 239**

**CP 2237**

**Subcommittee Recommendation:** Reject.

**Subcommittee Comment:** Falling on a conduit poses no greater risk than falling on other similar objects.

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative: Bohlk

Abstention:

**Appendix A**

**CP 2391 by SC4**

**Subcommittee Recommendation:** Accept. (**Secretary's Note:** Text of revised Appendix A is attached at the end of these minutes)

**Vote on Subcommittee Recommendation:**

Affirmative: Bednarz, Bleakley, Bohlk, Clapp, Davidchik, Engdahl, Henry, Hooper, Howard, Johnson, Komassa, Martineau, Mistry, Olinick, Oswald, Reding, Renowden, Ruehl, Schwarz, Stevens, Tomaseski, Washburn

Negative:

Abstention:

**Rule 215B1, B2, B3, B4**

**IR 2182**

**Subcommittee Recommendation:** Not a change proposal. No action required.  
**Not to be published in the Preprint.**

**Rule 238A**  
**IR 2183**

**Subcommittee Recommendation:** Not a change proposal. No action required.  
**Not to be published in the Preprint.**

**Rule 239H**  
**IR 2184**

**Subcommittee Recommendation:** Not a change proposal. No action required.  
**Not to be published in the Preprint.**

**END OF MINUTES**

**Errata notes to IEEE for the 1997 Edition:**

- Page 74, row 3, last column, replace 6.15 with 6.1<sup>5</sup>.
- Table 232-4 and several other tables having combined English and metric units: Apply the footnotes to both sets of values.