NATIONAL ELECTRICAL SAFETY CODE, ANSI-C2
2007 EDITION
SUBCOMMITTEE 5
GRADES (24), LOADS (25), STRENGTHS (26), INSULATION (27)

FINAL S/C 5 Meeting Minutes 9 JUNE 2003

Meeting January 30, 2003
Riviera Hotel
Royale Pavilion 7 Room
Las Vegas, Nevada

Attendance Sheet is attached as Exhibit 1.

Secretary's Notes:

Concern was expressed in the meeting about the 2007 submission methodology: we need to be able in one proposal to include changes to multiple rules affected by the same change. IEEE Staff has informed us that the electronic forms should be ready in a couple of weeks; we should prepare our proposals in Word format, so that they can be cut and pasted appropriately.

In the draft minutes, the Secretary referred members to section 8.2 below and asked the appropriate personnel to provide the requested insulator test papers/data for review. This was to include tests of modern porcelain insulator construction, in addition to the older CIGRE paper referenced at the meeting. That has not been done as of this date

1.0 Introduction of Subcommittee Members, Alternates, Guests and Staff Personnel

1.1 General Scheduling Comments, Information on Meeting Room Facilities, etc.
Frank Denbrock

1.2 Welcoming New Members and Alternates on S/C5

1.3 Status of e-mail, fax, correct addresses, etc.

2.0 Determination of Voting Eligibility of Subcommittee 5 Membership Present

2.1 Explanation of voting/balloting procedure (ANSI/NESC Procedures Manual)
Allen L. Clapp

3.0 Review, Discussion and Approval of Meeting Agenda

3.1 Additions and placement in agenda

3.2 Deletions

3.3 Approval to proceed as covered by agenda

4.0 Approval of Minutes from the Meeting at Chicago, Illinois, July 25-26, 2002

4.1 Additions, deletions or other corrections

No substantive votes made at the Chicago meeting.

4.2 Approval of Minutes

Minutes Approved unanimously

5.0 Brief Review and Discussion of New Developments, Standards, Guides and Research Efforts Affecting S/C5 Work on Revising/Updating 2002 Edition of NESC

5.1 Update on ASCE 7 Section 9 (Earthquakes) and Section 10 (Atmospheric Ice Loads)

Leon *Kempner, Others*

ASCE 7-2002 is available (Secretary's note: sources include ASCE, utilitybookstore.com, and Global Engineering documents). As a result of the Kempner protest, a requirement for earthquake consideration for relatively flexible utility structures in the same manner as ASCE 7 requires for rigid buildings was removed from the standard and is in the ASCE 7 Earthquake Subcommittee.

Heald and Clem are on the ASCE 7 Ice Subcommittee. ASCE 7 Subcommittees make recommendations to Main Committee, but do not vote on the changes. Work is in progress to get Nelson Bingel on the ASCE 7 Main Committee.

Kluge submitted to ASCE the negative comments that came to NESC SC5 proposal to include the new ASCE the ice/wind map to see what ASCE's comments were. ASCE responded that they have talked to each utility that commented.

5.2 ASCE-7 Extreme Wind Map

Leon Kempner, Jerry Wong, Jerry Hanson, others

Kempner indicates little change to the extreme wind map, but some change has occurred in the ice/wind map in ASCE 7-2002.

5.3 ASCE-7 and U. S. Corps of Engineers Ice Data/Ice, Wind Map

Clayton Clem, Leon Kempner, Robert Peters, Larry Slavin, Others

Pat Quinn (guest) indicated concern about the validity of the ice/wind map in the southeast. Apparently the data base is small and the Cold Region Labs are looking for funding for more study in the Southeast. Peters commented that the ASCE data is the best data available in the nation and is a published map. DeSantis indicated that the concern was the interpolation of the data, rather than having data points, but that the southeast utilities are apparently not willing to pay the $45,000 needed for the further study. Wong stated that the ice/wind maps are set to change as more data becomes available.

5.4 Status of ASCE Guides, ANSI 05, ANSI C29, and Other Standards, Guides for Possible Application in NESC Editions
Leon Kempner, Clayton Clem, Nelson Bingel, Jerry Wong, Donald Heald, Jerry Hanson, Andy Schwalm, Brian Lacoursiere, Larry Slavin, Others

Clapp reported that ANSI O5.1-2002 has an error in the Mean Modulus of Elasticity for wood in Table C.2 (i.e., the 17.3, 18.2 and 11.0)—the correct numbers are the numbers also shown in Table C.3 (2.51, 2.64, 1.59).

Schwalm indicated that a new standard C29.17 Distribution Compositie Line Post Insulators is out.

Bingel reported that the three main wood pole species (Western red cedar, Southern pine, and Douglas fir) previously had a designated fiber stress. The ANSI O5.1-2002 now uses mean fiber stress at ground line with a COV (coefficient of variation) of 20% to match with the ASCE Reliability Based Design document, in which there are 4 methods of determining the 5% LEL (lower exclusion level). Slavin remarked that the 5% LEL based upon a COV of 20% is consistent with a strength factor of 0.65 now used in the NESC for Grade B construction.

Kluge commented that, if using a taller pole, you will need a larger circumference at the ground line. Clapp discussed the present "at installation" wood values. The at-installation value at the ground line performs two functions: (a) it increases the ground line to allow for expected deterioration and (b) it increases the diameter at the maximum stress point roughly head-high on the tapered pole. Since the pole decays at a lesser rate at the maximum stress point, the present system assures that both the decaying ground line area and the maximum stress area are large enough to provide the necessary safety.

Peters commented that the revised CP 2372 recognizes the changes in ANSI O5.1-2002.

Lacoursiere indicated that a new ASCE standard is being developed under the ASCE Distribution Pole Standards Committee for distribution poles of all materials using the RBD approach.

5.5 Additional Developments, such as I.E.C. T.C. 99, Etc.
Frank Denbrock, Others

IEC TC 99 is working on a worldwide NESC system; there are eleven funded Technical Advisory Group (TAG) members from the U.S.

6.0 S/C 5 WG 5.1, Leon Kempner, Chair, Continuity of Sections 24, 25 and 26

6.1 Update on Task Force Work, Planning, Organizing, Staffing for the Identified Activities Anticipated for 2007 Edition
Leon Kempner, Others

TF 5.1.1-Construction Loads. Clapp commented on removing the present consideration of worker loads from the vertical overload factor and adding specific loads using ESMOL input. A proposal will be available shortly.

TF 5.1.2-60-ft Exemption. Heald will have several proposals ready for July submission. They will distinguish between Grade B and Grade C for extreme wind.

TF 5.1.3-Inconsistencies. Clapp reported no new proposals are in the works other than those reported on elsewhere.

TF 5.1.4-Old Factors vs New Factors. Kluge reported that a change proposal will be ready for consideration in October.

TF 5.1.5-Wind Loading. Kempner discussed the present treatment of kz factors in the 2002 Edition. The present systems aggregates across the structure, using a 2/3 factor to correct from the top to the center of pressure (similar to ASCE Manual 74). This is the).67 factor in the formula. However, some people want to put loading on individual components, such as large tower arms at high levels, rather than the aggregate. A CP will be prepared to require adjustment of the 0.67 factor for such conditions. Kempner was requested to place an example in the document. An errata needs to be issued for the misprint of 35 ft instead of 33 ft in one table value.

TF 5.1.6-Ice. Shultz will prepare a working draft of extreme ice loads with different overload factors. The present ASCE 7 ice/wind map is a freezing rain map and does not include heavy snow or rime ice (hoar frost). The group does not plan to remove the present ice map when the new one is added; the present one will be left to address heavy snow and rime ice until more detailed information is available.

TF 5.1.7-Fiber Reinforced Polymer Structures and Components.

Slavin proposed 2 alternate CPs for incorporating FRP structures and crossarms, etc., into the NESC. Discussion focused upon one of these versions, including specification of recommended overload and strength factors for Section 25 and 26, with additional rules included to be consistent with related rules for other materials in Section 26. The ASCE RBD guide is referenced for providing the methodology for obtaining the 5^{th} percentile strength of the FRP structures or components.

TF 5.1.8-Grade B vs Grade C Reliability. Slavin drafted 3 CPs to incorporate the new ASCE RBD design techniques.

Bingel will send out options generated in yesterday's meeting to detail how to appropriately apply loading variability, strength variability, and importance factors.

Kluge discussed Grade B vs Grade C overload factors for vertical load and strength factors.

Heald commented that the Grades of Construction in the old codes was for transverse loads, not vertical. The problems came about when merging the old crossarm limits with poles. Crossarms always had a factor of 2.0.

Clapp plans to propose a change to separate all the factors into three sets: loading variability, strength variability, and importance factors (such as angle and deadend vs tangent structure; wind vs wire tension; wire,

railroad and limited access highway crossings vs noncrossing spans). This would work with all materials. The importance factors could either be applied to the factored load to create the design load or used to reduce the factored strength to an allowed strength. Most participants preferred placing the importance factors on the left side of the equation and using them to define the design load.

6.2 Presentations and Proposal to Modify NESC Rule 261H1, Sags and Tensions.
Allen L. Clapp, Dr. David G. Havard, Others

Dr. Havard presented a discussion on aeollian vibration problems. He has been working with US utilities having failures of conductors on distribution lines with high tensions. Lines were found to be built to the NESC limitations of 25% RTS at 60 °F initial sag and 35% RTS at 60 °F at final sag, but were suffering from aeollian vibration failures due to the lack of dampers.

There is a survey by CIGRE Task Force 4 of SC 22 (B2) WG 11. IEEE literature is available showing tension limits with and without dampers. Conductors react differently, depending upon construction: ACSR and all-aluminum conductors react differently, as do ACSR conductors with large amounts of steel vs small amounts of steel.

Field failures of smaller conductors show that they fail by fatigue at lower % RTS than larger conductors.

Havard feels that the limits of tension/mass or tension/weight should be used in the NESC as limits. The 1960 CGRE guidelines are documented by material and composition, and damped vs. undamped.

The Havard proposal uses the average temperature of the coldest month. Peters recommends using the ALCOA recommendation of the average annual *minimum* temperature—this might change the numbers in the proposal.

Vibration occurs at low speed 2 mph at highest tension.

Peters recommended that further limits be added to the NESC.

Hensel suggested that we may need to recommend considering dampers above a certain H/W (horizontal tension/weight) value and not put in the specifications. He has installed spacer cable with high tensions in the steel, but the spacer cable attachments function as dampers.

Freimark commented that original limits at 60 °F were put in for vibration limits.

ADSS (all-dielectric, self-supporting) fiber optic cable has a large problem with vibration, due to its low weight.

Freimark and Peters volunteered to work with Dr. Havard to put his proposal into code language.

6.2.1 Discussions, Questions, Answers, Decisions
Coordinator, Leon Kempner, Chair

6.3 Review of NESC Interpretations Request IR 530 and Confusion in 2002 Edition when Applying Rule 216D2a(2) and Tables 261-1A, or 261-1B.
Nicholas J. DeSantis, Bruce Freimark, Donald G. Heald, Frank Denbrock, Others

DeSantis volunteered to prepare a change proposal to get crossarms into the appropriate places in Table 261-1A

6.3.1 Question: Should NESC S/C5 Recommend an Immediate Issuance of an Errata Sheet?
Coordinator, Leon Kempner, Chair

SC5 decided informally that the recent interpretation answer would function satisfactorily for this edition and we need only to prepare a CP for the next edition.

6.4 Scheduling Future Meetings of WG 5.1 (Joint; WG 5.1 or T.F. Only, e-mail, etc.)
Leon Kempner, Others

6.5 Submission of proposal to delete alternate method for wood, as intended for the 2002 Edition.
Bob Kluge

The subcommittee voted unanimously to prepare a proposal to modify Rules 253 and 261 to delete the alternate method for wood poles and reinforced concrete poles, as distributed by Kluge and modified in discussions.

6.6 Vertical Loads for Grades B & C.
Bob Kluge

The subcommittee voted unanimously to prepare a proposal to modify Table 253-1 to separate overload factors for Grade B and Grade C loads using the language in the present revision of CP2372 Rule 250D on maintenance loads. Kluge, Clapp and Freimark of Task Force 5.1.1 to prepare the proposal.

7.0 S/C 5 WG 5.2, Robert Peters, Chair, Total Revision of Sections 24, 25 and 26 for 2007 Edition (CP 2372)

7.1 Present Status of Various Proposals To Date (all Past 152 Drafts)
Robert Peters, Bruce Freimark, Larry Slavin, Others

Peters had 10 subjects for discussion, some of which had already been handled as part of other discussions.

1. WG 4.10 on clearances. See discussion under 9.1

2. Application of the ASCE 7 ice/wind map to Alaska. We may have to place a requirement referencinc local data, such as “Due to the lack of statewide data, use ¾ in ice with 30 mph wind, unless local data is known to be greater.”

3. Table 253-1 tension overload factor. See discussion at 6.6 and elsewhere.

4. Rule 260B and IEEE Std 751. Standard 751 Trial Use Design Guide for Wood Transmission Structures needs to be affirmed.

5. Recognition of ANSI O5.1-2002. Rule 261A3c of the proposal recognizes the changes in the 2002 Ed.

6. Incorporating new fiber reinforced polymer rules. The new RBD-type considerations are being incorporated. With respect to concern about the ice/wind map, Freimark suggested that a note be added that we will use the best map available at the time of voting and, if other CPs affect this comprehensive proposal, the proposal will be modified to reflect such needs.

7. Insulators. The presentation this morning indicates that the 70% limit using extreme loads needs to be modified. We may propose to apply load factors to deadends to limit deadends to 50% but allow tangent structures to go to 70%; the matter is under discussion with the Working Group.

8. Kluge comments on the proposal. See other discussion of working loads.

9. RBD Changes. Discussed at item 6 and elsewhere.

10. Table 253-1. Discussed elsewhere.

7.2 Planning, Organizing, Staffing for All Anticipated Working Group Activities for the 2007 Edition
Robert Peters, Bruce Freimark, Others

7.3 Scheduling Future Meetings of WG 5.2 (Joint, WG 5.2 or T.F. Only, e-mail, etc.)
Robert Peters, Others

8.0 S/C 5 WG 5.6, Andy Schwalm, Chair, Section 27, Line Insulation

8.1 Update on Task Force work, Planning, Organizing, Staffing for the Identified Activities Anticipated for 2007 Edition
Andy Schwalm, Tom Pinkham, Bruce Freimark

Two task forces are working. No substantive things happening in the insulator industry that would affect NESC proposals.

8.2 Requested Time for Presentation by Chairman of ANSI C29 Insulator Committee
Mr. Jack Varner, Chair ANSI C29, and Mr. Rick Stanley, Vice Chair ANSI C29 and Chair of NEMA High Voltage Subcommittee, with Andy Schwalm of SC5

The NEMA High Voltage Subcommittee started working a year ago to prepare information to show why ANSI C29 had taken its position against allowing extreme loads to exceed 50% of the insulator strength rating. A variety of studies of insulator failure have been performed: some recently and some decades ago.

Stanley reported on a set of test data. See attached Powerpoint presentation. Eighty-eight nonceramic suspension units with a 16 mm

strength rod rated at 25000 lb (111 kN) ultimate were tested (some outdoors and some indoors). 90% of the units failed. 10% of the units did not fail during the testing.

Most of the failures failed at or near 80% of the rated load. See Powerpoint Graph 1 *16mm Time-Load Failures*. The approximately 91kN load (20,500 lbs) at the start of the majority of failures represents loads greater than approximately 80% of the specified mechanical loading (SML). The units that did not fail are not shown on this slide Most cases had some deformation or damage to hardware (end fittings) at 65% of rating. A few failed in less than 3 minutes.. Many failed quickly (the large grouping of failures started at approximately 0.7 day); half failed by 0.01 year (3.65 days). 90% of the failures were rod failures (apparently in the crimp area). The control samples failed quickly at 105% to 110% of rating (see Powerpoint Graph 2 *16mm - Control Samples - UTS*). Units that did not fail in the original test were loaded until they did fail and produced results similar to the control samples (see Powerpoint Graph 3 *16mm Rods- UTS Samples – Before and After*). All the data is from one manufacturer, but is consistent with data from others. This data was presented in 1999 by Alan Bernstorf at the IEEE T&D meeting in New Orleans in a paper on insulator time failure. **(Secretary's Note: we requested a copy of this paper for review by SC5 members, but no one has provided it to Secretary Clapp).**

Similar results were shown in a CIGRE paper on ceramic insulators: *Duration of Load and Influence on the Ultimate Strength of Suspension Insulators* by John Taylor in 1939. **(Secretary's Note: we requested a copy of this paper for review by SC5 members, but no one has provided it to Secretary Clapp).** In this paper, endurance was charted against load. At 0.0001 days the failure tension ranged from 80% to 120% of rating. See Powerpoint Graph 4 *Endurance Chart-Porcelain Suspension Insulators*. At 0.1 day, the range was down to 70% to 110% of rating. At 100 days, the failure tension range was down to 60% to 90% of rating. A finding of the study was that, at high values of load, a 1% increase in load decreased the duration to about 60% of its previous value. As a result of those early tests, the proof test was raised from 40% to 50% of rating. Tests of polymer suspension insulators (Powerpoint Graph 5 *Endurance Chart – Polymer Suspension Insulators*) indicated that the low end of the range did not reduce substantially from around 85% of rating, but the high end fell from around 125% to 100%.

All insulators are tested prior to shipping to 50% of the rating, using 3 seconds to bring the insulator up to 50% of rating and holding the load for 3 seconds, before the load is removed.

Secretary's Note: There have been considerable advances in insulator technology since those CIGRE tests. Are there available papers/data with similar tests of modern insulators that can be provided for review?

8.2.1 Discussions, Questions, Answers, Decisions

Coordinator, Andy Schwalm, Chair

Freimark commented that the NESC has always used unfactored loads with the 50% limit, as recommended by the insulator manufacturing community. The Rural Utilities Service of the US Department of Agriculture is recommending "real-world" (loads with overload factors) up to 70% of rating. American Electric Power has asked insulator manufacturers for appropriate limits for real world loads at 100 hours over 50 years and been given a limit by the manufacturers of 85% for both polymer and ceramic. Either these utility personnel have been misinformed in the past by insulator manufacturers of the ANSI C29 Committee has ignored the issues until the NESC 2002 change proposal to go up to 70% of rating for real world factored loads for extreme winds. If C29 is serious about these issues, then C29 should submit a proposal to NESC to correct these issues.

Schwalm commented that the C29 position has always been 50%. C29 develops product standards, not safety standards. Data is not uniform. C29 data shows as load increases, strength decreases. Since the data indicates a high probability of failure at 70% of rating, C29 recommends a 50% limit.

Peters commented that he had never heard an insulator manufacturer recommend over 50%.

Ishac commented that Canada designs for 2 inches of ice and takes insulators up to 85% of rating under that loading. However, they have a limit of 20% for everyday loading.

DeSantis stated that, while it was not the responsibility of ANSI C29 to dictate how the NESC applies their strength limitations, it was the responsibility of C29 to educate the NESC SC5, and he thinks they have done so. It is also not the responsibility of C29 to submit change proposals to the NESC. He was not on the subcommittee in 1977 when these insulator limits were initiated, so he doesn't know how these limitations were put in place. However, he has been designing transmission lines since 1973 for two utilities governed by extreme wind and has never exceeded 50% under extreme winds, including their own criteria that exceeds the NESC's criteria. Unless some form of documentation can be provided that the subcommittee was led astray by ANSI C29, he suggests keeping comments to one's self. He would like AEP and RUS to provide us with their detailed loading analysis, as Rule 250A3 states, which justified their increase in insulator loading.

Stanley commented that papers show that slow application of load like ice doesn't have as much effect.

Schwalm stated that an EPRI paper was presented this week at the IEEE technical meetings and that he would provide a summary sheet for the minutes. 1500 strings of insulators were tested after 15-20 years in service; all were 10: porcelain suspension insulators. The paper shows degradation of both mechanical and electric strength; the population spread was down in the 60% range.

Asgharian commented that many utilities are using 85% limits on extreme loads and asked to see the failure data showing in-service failures. Stanley indicated he knew of no such data.

Varner indicated that, if the failure does not cause an outage, it may not be recorded—it will just get replaced in the normal course of events.

Schwalm commented that the bottom units could have failed electrically without dropping the line and would not be known until the insulators were tested. There is a Standard 987 Guide for Application of Nonstandard Insulators. *Name of standard not provided for minutes.*

Bishop commented that his Electric Cooperative had found a high percentage of insulators had failed electrically and caused "blinking lights". New testers are available to test insulators while in service.

8.3 Scheduling Future Meetings of WG 5.6 (Joint; WG 5.6 or T.F. Only, e-mail, etc.)
Andy Schwalm, Others

8.4 Need for a TIA to adjust insulator loading.
Kluge;, Others

After the discussions about insulator test results and the changes in insulator strength over time, the subcommittee considered both immediate and long-term changes to insulator strength requirements. A proposal and rationale will be developed by Kluge and Clapp, including the ANSI C29 letter, etc.

A motion was made and passed to prepare both a TIA and a CP to modify Rule 277 on insulator strength to require the use of all loads in Section 25, including their respective overload factors when determining the load to match to the limits in Rule 277.

Voting Affirmative: Bishop, Clapp, Hensel, Kluge, Lacoursiere, Peters, Rempe, Shultz, Slavin, Standford, Schwalm, and Wong.

Voting Negative: Denbrock, DeSantis, Freimark, Heald, and Kempner

Abstaining: Bingel, Bullinger(on behalf of retiring Wilkenloh)

Comments:

Bingel, Denbrock: not sure it meets a TIA requirement

Bullinger: not qualified/prepared to vote at this time

Freimark: against in principle—prefers a note to the engineer to apply % to the heaviest design load, including extreme wind

A motion was made and passed to have the effective date of the TIA be 180 days after issuance.

Voting Affirmative: Bishop, Clapp, DeSantis, Hensel, Kluge, Lacoursiere, Peters, Rempe, Shultz, Slavin, Standford, and Schwalm,.

Voting Negative: Denbrock, Freimark, Heald, Kempner and Wong

Abstaining: Bingel, Bullinger(on behalf of retiring Wilkenloh)

Comments:

Bullinger: not qualified/prepared to vote at this time

9.0 S/C 5 WG 5.7, Larry Slavin, Chair, Seminars, Research, Coordination with other NESC S/C's

9.1 Update on all Activities, Planning, Organizing, Staffing for the Identified Work Anticipated for 2007 Edition
Larry Slavin, Others

WG 4.10. Slavin reported that the new ice/wind map t be used for structural limits will require the old map in Fig. 250-1 to be moved to Section 23 to be used with clearance limits. The move will require the appropriate wind on ice loading to be considered, so that the correct stretch will be considered in determining the resultant maximum vertical sags for clearances purposes. Reding, Hooper, Gunter and Amrhyn of the Task Force are writing the supporting comments. There are also issues of cast rod stretch vs rolled rod stretch to be considered. Since most wire is cast rod (which stretches less), it is conservative to use sag charts based upon rolled rod.

Freimark reported that AEP designs everything with controls on final sag.

Old codes included a limit of 75% of the maximum sag increase.

Clapp is considering a proposal to use extreme wind and extreme ice/wind maps to determine wire stretch for vertical sags above line, railroad, and limited access highway crossings, with the present system (based upon 8 lb wind on ice or 9 lb on bare) for other areas.

9.2 Scheduling Future Meetings of WG 5.7 (Joint; WG 5.7 or T.F. Only, e-mail, etc.)
Larry Slavin, Others

There are no scheduled panel sessions.

10.0 S/C 5 WG 5.8, Brian Lacoursiere, Chair, Liaison with ASCE on Reliability Based Design

10.1 Update on Activities, Planning, Organizing, Staffing for the Identified Activities Anticipated for 2007 Edition
Brian Lacoursiere, B. Freimark, L. Kempner, R. Peters, L. Slavin, Others

The ASCE RBD Manual of Practice will be reviewed by the RBD Committee next week; it will then go out for peer review. They expect to have to ASCE by July and published by the end of 2003.

The ASCE Distribution Pole Manual Subcommittee is looking for a chair. Lacoursiere can send a cop of the minutes and draft scope to those interested.

10.2 Scheduling Future Meetings of WG 5.8 (Joint; WG 5.8 Only, e-mail, etc.)

Brian Lacoursiere, Others

11.0 Review, Past, Present, and Future Subcommittee 5 Activities and Need to Retain, Delete or Establish New Working Groups, Task Forces, etc.

A list of members of task forces and working groups is attached: please check for correctness and provide corrections to Clapp.

11.1 Past, Present Working Groups and Task Forces; Retain or Delete?

- W.G. 5.1; ***L. Kempner (Chair) –*** *Continuity of Sections 24, 25 and 26*
  - T.F. 5.1.1 ***(Clapp) –*** *Construction and Maintenance Loads*
  - T.F. 5.1.2 ***(Heald)*** - Review 60 foot Exemption
  - T.F. 5.1.3 ***(Clapp)*** *– Inconsistencies of Sections 24, 25, 26 and 27*
  - T.F. 5.1.4 ***(Kempner) –*** *Old, Alternate vs. Recommended Method*
  - T.F. 5.1.5 ***(Kempner) –*** *Wind Loading*
  - T.F. 5.1.6 ***(Clem) –*** *Ice Loading*
  - T.F. 5.1.7 ***(Bingel)*** *– Fiber Reinforced Composite Structures*
  - T.F. 5.1.8 ***(Bingel)*** *– Grade B vs. Grace C Reliability*
- W.G. 5.2; ***R. Peters (Chair) –*** *Total New NESC (CP 2372)*
  - T.F. 5.2.1 ***(Freimark, Slavin)*** *– Continuing Reviews*
- W.G. 5.6; ***A. Schwalm (Chair)*** *– Section 27-Line Insulation*
  - T.F. 5.6.1 **(Schwalm)** *– Coordinate Changes/Improvements/New Materials*
  - T.F. 5.6.2 **(Schwalm*, Rojas, DeSantis)*** *– Test Methods/Extreme Loading/Emergency Conditions/Temporary Conditions/Etc.*
- W.G. 5.7; ***Lawrence Slavin (Chair)*** *- Seminars, Research, Coordination with Other S/C's, Etc.*
  - T. F. 5.7.1 ***(Slavin)*** – Seminars, When, Where, Who, etc.
  - T. F. 5.7.2 ***Slavin)*** – Solicit Comments on WG 5.2 Methodology-Status?
- W. G. 5.8; ***Brian Lacoursiere (Chair) –*** *Liaison with ASCE on Reliability Based Design*
  - T.F. 5.8.1 ***(Lacoursiere)*** *Presentations of New Concepts for NESC Considerations*

11.2 New Working Group and Task Force Requirements

- Title
- Scope of Activities
- Schedule of Completion

- Membership

12.0 Scheduling of Future Subcommittee 5, Working Group and Task Force Meetings

12.1 IEEE Toronto Meeting July 12-18, 2003

12.2 Other Meetings of ASCE, IEEE, ANSI 05, U.S. Corps Engs., IEC, etc.

12.3 Individual TF, WG or another S/C5 Meeting - ? WHERE - ?

13.0 General Comments on ANSI C2-NESC Organization, Scope of Work Activities, Needed Improvements, etc.

13.1 Your Turn, Tell Everyone What you Think About What We Are Doing to Obtain The 2007 Edition of NESC.

14.0 S/C5 Secretary's Information on Proper Minutes Format, Records, Reports, Distribution, Etc.

14.1 Review of ANSI/IEEE/NESC Requirements
Allen L. Clapp, S/C 5 Secretary

14.2 Discussions, Clarifications, Etc
All Still in Attendance

15.0 Adjournment

15.1 Next meeting: Monday, June 23 (1:00 pm start) – Friday, June 27 (noon adjourn) to finalize subcommittee change proposals

15.2 Following meeting: Monday, September 29 (10:00 am start) – Friday, October 3 (noon adjourn) to consider all change proposals submitted in July

Exhibit 1

NESC Subcommittee 5 Meeting Attendance January 30, 2003 Las Vegas

SC5 Voting Members	SC5	Telephone	email
Ajello	x		
Amato	x		
Bingel	x		
Bishop	x		
Clapp	x		
Clem			
Denbrock	x		
DeSantis	x		
Freimark	x		
B. Fuller			
Heald	x		
D. Hanson			

J. Hanson		
Harrel		
Hensel	x	
W. Jones		
Kempner	x	
Kluge	x	
Peters	x	
Rempe	x	
Rubiez		
Schwalm	x	
Shultz	x	
Slavin	x	
Standford	x	
Wilkenloh	x	Note: last meeting; being replaced by Bullinger
Wong	x	

SC5 Alternate Members

Aichinger	x	
Corzine	x	
Lacoursiere	x	

Guests

Dave Asgharian, Pacificorp	x	503.813.5164	dave.asgharian@pacificorp.com
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