COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P.O. BOX 3265, HARRISBURG, PA 17105-3265

July 22, 2019

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Pennsylvania Public Utility Commission, Bureau of Investigation and Enforcement v. Metropolitan Edison Company
Docket No. C-2019-_____

Dear Secretary Chiavetta:

Enclosed for electronic filing please find the Complaint in the above referenced case on behalf of the Bureau of Investigation and Enforcement of the Pennsylvania Public Utility Commission. Copies have been served on the parties of record in accordance with the Certificate of Service.

Copies have been served on the parties of record in accordance with the Certificate of Service.

Sincerely,

Kourtney L. Myers
Prosecutor
PA Attorney ID No. 316494

Prosecutor for the Bureau of
Investigation and Enforcement

Enclosures

cc: As per Certificate of Service

NOTICE

A. **You must file an Answer within 20 days of the date of service of this Complaint.** The date of service is the mailing date as indicated at the top of the Secretarial Letter. *See* 52 Pa. Code §1.56(a). The Answer must raise all factual and legal arguments that you wish to claim in your defense, include the docket number of this Complaint, and be verified. You may file your Answer by mailing an original to:

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Or, you may eFile your Answer using the Commission's website at www.puc.pa.gov. The link to eFiling is located under the Filing & Resources tab on the homepage. If your Answer is 250 pages or less, you are not required to file a paper copy. If your Answer exceeds 250 pages, you must file a paper copy with the Secretary's Bureau.

Additionally, please serve a copy on:

Kourtney L. Myers, Prosecutor
Pennsylvania Public Utility Commission
Bureau of Investigation and Enforcement
P.O. Box 3265
Harrisburg, PA 17105-3265
komyers@pa.gov

B. If you fail to answer this Complaint within 20 days, the Bureau of Investigation and Enforcement will request that the Commission issue an Order imposing the requested relief.

C. You may elect not to contest this Complaint by paying the civil penalty within 20 days. Send only a certified check or money order made payable to the "Commonwealth of Pennsylvania," with the docket number indicated, and mailed to:

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

D. If you file an Answer which either admits or fails to deny the allegations of the Complaint, the Bureau of Investigation and Enforcement will request the Commission to issue an Order imposing the requested relief set forth in this Complaint.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The Judge is not bound by the penalty set forth in the Complaint, and may impose additional and/or alternative penalties as appropriate.

F. If you are a corporation, you must be represented by legal counsel. 52 Pa. Code § 1.21.

G. Alternative formats of this material are available for persons with disabilities by contacting the Commission's ADA Coordinator at 717-787-8714.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission Bureau of Investigation and Enforcement, Complainant	: : :	
	:	Docket No. C-2019-
v.	:	
	:	
Metropolitan Edison Company, Respondent	: :	

FORMAL COMPLAINT

NOW COMES the Bureau of Investigation and Enforcement ("I&E") of the Pennsylvania Public Utility Commission ("Commission"), by its prosecuting attorneys, pursuant to Section 701 of the Public Utility Code, 66 Pa.C.S. § 701 and files this Formal Complaint against Metropolitan Edison Company ("Met-Ed," "Company," or "Respondent") alleging violations of the Pennsylvania Code, National Electric Safety Code, and Public Utility Code in connection with a fatal electrocution that occurred on July 26, 2016 in Easton, Northampton County, Pennsylvania. In support of its Complaint, I&E avers as follows:

I. Commission Jurisdiction and Authority

1. The Pennsylvania Public Utility Commission, with a mailing address of P.O. Box 3265, Harrisburg, PA 17105-3265, is a duly constituted agency of the

Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth pursuant to the Public Utility Code, 66 Pa.C.S. §§ 101, *et seq*.

2. Complainant is the Commission's Bureau of Investigation and Enforcement, which is the bureau established to take enforcement actions against public utilities and other entities subject to the Commission's jurisdiction pursuant to 66 Pa.C.S. § 308.2(a)(11). *See also Implementation of Act 129 of 2008; Organization of Bureaus and Offices*, Docket No. M-2008-2071852 (Order entered August 11, 2011) at 5 (delegating authority to initiate proceedings that are prosecutory in nature to I&E).

3. Complainant's prosecuting attorneys are as follows:

Kourtney L. Myers
Prosecutor
komyers@pa.gov
717.705.4366

Michael L. Swindler
Deputy Chief Prosecutor
mswindler@pa.gov

Pennsylvania Public Utility Commission
Bureau of Investigation and Enforcement
P.O. Box 3265
Harrisburg, PA 17105-3265

4. Respondent is Metropolitan Edison Company,[1] an electric distribution company ("EDC") with a main mailing address of 2800 Pottsville Pike, Reading, PA 19612, Attention: Tori L. Giesler, Esquire.

[1] Met-Ed is a wholly-owned subsidiary of FirstEnergy Corp. ("FirstEnergy").

5. Met-Ed is a "public utility" as that term is defined at 66 Pa.C.S. § 102,[2] as it is engaged in providing public utility service as an EDC in the Commonwealth of Pennsylvania to the public for compensation.

6. Section 501(a) of the Public Utility Code, 66 Pa.C.S. § 501(a), authorizes and obligates the Commission to execute and enforce the provisions of the Public Utility Code.

7. Section 2804(1)(ii) of the Public Utility Code, 66 Pa.C.S. § 2804(1)(ii), requires the Commission "to ensure the continuation of safe and reliable electric service to all consumers in the Commonwealth, including. . . .[t]he installation and maintenance of transmission and distribution facilities in conformity with established industry standards and practices, including the standards set forth in the National Electric Safety Code [("NESC")]." *See also* 52 Pa. Code §§ 57.193-194.

8. Section 701 of the Public Utility Code, 66 Pa.C.S. § 701, authorizes the Commission, *inter alia*, to hear and determine complaints against public utilities for violations of any law or regulation that the Commission has jurisdiction to administer or enforce.

9. Section 3301 of the Public Utility Code, 66 Pa.C.S. § 3301, authorizes the Commission to impose civil penalties on any public utility or any other person or corporation subject to the Commission's authority for violation(s) of the Public Utility

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[2] At 66 Pa.C.S. § 102, "Public utility" is defined under that term at subsection (1)(i) as:

(1) Any person or corporations now or hereafter owning or operating in this Commonwealth equipment or facilities for:

(i) Producing, generating, transmitting, distributing or furnishing natural or artificial gas, electricity, or steam for the production of light, heat, or power to or for the public for compensation.

Code and/or Commission regulations. Section 3301(a)-(b) of the Public Utility Code, 66 Pa.C.S. § 3301(a)-(b), allows for the imposition of a separate civil penalty for each violation and each day's continuance of such violation(s).

10. Respondent, in providing electric distribution service to the public for compensation, is subject to the power and authority of this Commission pursuant to Section 501(c) of the Public Utility Code, 66 Pa.C.S. § 501(c), which requires a public utility to comply with Commission regulations and orders.

11. Pursuant to the provisions of the applicable Commonwealth statutes and regulations, the Commission has jurisdiction over the subject matter of this Complaint and the actions of Respondent related thereto.

II. Factual Background

12. On July 26, 2016, a conductor[3] owned and operated by Met-Ed fell into the backyard of the residence of Thomas and Sarah Poynton at 250 Royal Manor Road, Easton, PA 18042.

13. The Poyntons and their two-year-old daughter were inside their residence at the time the conductor fell to the ground.

14. Thomas Poynton encountered energized ground outside of his home, was continuously electrocuted, and died as a result of the downed conductor.

15. The Poynton's residence also caught fire.

[3] At NESC § 2, "conductor" is defined as "[a] material, usually in the form of a wire, cable, or bus bar, suitable for carrying an electric current." NESC § 2, *National Electrical Safety Code*, 2012.

16. That same day, I&E's Safety Division responded to the scene and initiated an investigation. The following background consists of a summary of the findings of I&E Safety Division's investigation:

A. Conductor

17. The downed conductor (hereinafter referred to as "Phase C") was a 34,500-volt sub-transmission line.[4]

18. Phase C was part of a three-phase[5] 34.5kV delta configured circuit, Glendon 3032 (hereinafter referred to as "Glendon Circuit 3032").

19. The three-phase conductors on Glendon Circuit 3032 (hereinafter referred to as "Phase A," "Phase B," or "Phase C") were aluminum conductors steel-reinforced ("ACSR").

20. Met-Ed has records demonstrating that Phase C was installed in 1926.

B. Clamps

21. Individually attached to each Phase A, B, and C, was a bronze, hot line clamp[6] marked, "BH4 6 SOL-400 STR.CU" (hereinafter referred to as "Clamp A," "Clamp B," or "Clamp C" or collectively as "clamps").

22. The clamps were manufactured by Hubbell Power Systems, Inc. ("Hubbell").

23. Phase C, with Clamp C attached, fell from its point of attachment with Clamp C to the ground. A picture of Clamp C is attached as Exhibit 1.

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[4] At 52 Pa. Code § 57.1, "transmission line" is defined as "[a]n overhead electric supply line with a design voltage greater than 35,000 volts."
[5] "Three-phase" means three (3) conductors, Phases A, B, and C.
[6] A clamp is a type of connector.

24. Met-Ed does not know the date that it installed Clamps A, B, and C on Phases A, B, and C, respectively; however, Respondent has records of maintenance work related to the equipment and facilities involved in the incident that date back to 1998. *See* Paragraph 37, *infra*.

25. Respondent does not know the locations of other BH4 6 SOL-400 STR.CU clamps that were installed on its equipment and facilities.

26. Hubbell's General Catalog from 1996 directs that a BH4 6 SOL-400 STR.CU clamp is "for [a] copper conductor" and that "the use of an aluminum conductor in a standard copper base connector (plated or unplated), **is not recommended**." Hubbell Power Systems, *General Catalog*, C-4, C-5, J-2, and J-3 (1996) (emphasis added). A copy of Pages C-4, C-5, J-2, and J-3 of Hubbell's General Catalog is attached as Exhibit 2.

27. Hubbell's Distribution Connectors Catalog from April 2004 also directs that a BH4 6 SOL-400 STR.CU clamp is "for [a] copper conductor" and that "the use of an aluminum conductor in a standard copper base connector (plated or unplated), **is not recommended**." Hubbell Power Systems, *Distribution Connectors*, DC-6, DC-7, DJ-2, and DJ-3 (2004) (emphasis added). A copy of Pages DC-6, DC-7, DJ-2, and DJ-3 of Hubbell's Distribution Connectors Catalog is attached as Exhibit 3.

28. FirstEnergy Material Specification No. 02-455 FE, dated March 5, 2004 and related to BH4 6 SOL-400 STR.CU clamps, directs that "the clamp is used on **copper** or copperweld conductors or with stirrups." (emphasis added). A copy of FirstEnergy Material Specification No. 02-455 FE is attached as Exhibit 4.

29. As mentioned in Paragraph 19, *supra*, Phases A, B, and C were aluminum conductors steel-reinforced, not copper or copperweld.

30. Clamps A, B, and C were not used with stirrups.

31. At the time of the incident, Met-Ed did not have any installation procedures related to BH4 6 SOL-400 STR.CU clamps, like Clamps A, B, and C.

C. Poles

32. Phases A, B, and C were suspended, in part, by Met-Ed Pole Nos. 70882-48106 and 70868-48110 (hereinafter collectively referred to as "poles").

33. Met-Ed has records demonstrating that Pole No. 70882-48106 was installed in 1926 and later replaced in 1952 and that Pole No. 70868-48110 was installed in 1952.

34. Prior to the incident, from 2004 to 2016, Met-Ed conducted annual, infrared inspections on certain equipment and facilities, including Pole No. 70882-48106, and did not identify any incorrectly installed equipment or any equipment in need of repair on Pole 70882-48106.

35. Prior to the incident, in 2008, 2011, 2013, and 2014, Met-Ed performed visual inspections of its equipment and facilities located between the poles, including Phases A, B, and C.

36. During the visual inspections of its equipment and facilities located between the poles, Met-Ed did not identify any incorrectly installed equipment or any equipment in need of repair.

37. Prior to the date of the incident, the only maintenance work recorded by Met-Ed related to the poles was the addition of a 4.8kV underbuild on Pole No. 70868-

48110 on March 4, 1998 and the installation of fault indicators on Pole No. 70882-48106 on May 11, 2011.

D. Ground Fault Protection System

38. Mounted to Glendon Circuit 3032 was a 34.5kV Vacuum Circuit Breaker ("Glendon Breaker 3032") and associated Preconfigured Matching Unit ("PCMU") Relay (collectively referred to as "ground fault protection system").

39. Met-Ed has records demonstrating that Glendon Breaker 3032 was installed in May 1989 and that the PCMU relay was installed on July 22, 2014.

40. Met-Ed does not have any material specifications related to Glendon Breaker 3032 or the PCMU Relay.

41. On the day of the incident, Met-Ed's ground fault protection system ultimately failed to cut off the electricity to Glendon Circuit 3032, which allowed the continued flow of electricity to Phase C after it made contact with the ground.

E. Chronology of Events on the Day of the Incident

42. At 9:55 AM on July 26, 2016, Phase C fell to the ground approximately 70 feet from the Poynton's residence.

43. At this time, Glendon Breaker 3032 detected a fault and tripped, breaking the electric current to Phase C, but then auto-reclosed, restoring the flow of electricity to Phase C.

44. After hearing a loud explosion outside his residence, Thomas Poynton exited the rear of his home, stepped into the grass, and encountered energized ground from Phase C.

45. Thomas Poynton fell to the ground and was electrocuted. At no point did Thomas Poynton come into contact with Phase C.

46. The Poynton's home caught fire.

47. At approximately 9:59 AM, the Northampton County 911 Center ("911") received a call regarding a man that was being electrocuted in his backyard and a house fire.

48. At approximately 10:08 AM, Met-Ed received a "life and limb" call from 911 for the Poynton's residence at 250 Royal Manor Road, Easton, PA 18042.

49. Thomas Poynton remained in a downed position on the ground and was electrocuted by the electric current being transmitted through the ground from Phase C.

50. At approximately 10:12 AM, Met-Ed's Distribution System Operator opened Glendon Breaker 3032 in an attempt to interrupt current flow to Phase C.

51. At approximately 10:20 AM, the 911 Dispatcher again reported to Met-Ed that Phase C was still on the ground and energized.

52. The energized ground caused by Phase C prevented first responders from providing aid and resuscitative measures to Thomas Poynton and fire suppression to the Poynton's residence.

53. Thirty-six (36) minutes after the "life and limb" call to Met-Ed, at approximately 10:44 AM, Respondent confirmed that Glendon Circuit 3032 was de-energized and that the area was safe for first responders to provide aid.

54. At approximately 11:00 AM, Thomas Poynton was pronounced dead at the scene due to electrocution.

F. Aluminum Connectors

55. Post incident, while Phases A, B, and C were still de-energized, Met-Ed replaced Clamps A, B, and C with aluminum connectors.

56. FirstEnergy Material Specification No. 02-700 FE, dated May 1, 2007 and related to the aluminum connectors, provides that "[t]hese devices **can be used** for conductor combinations including AAC, AAAC, ACAR, **ACSR**, ACSR/AW, AW and copper." (emphasis added). A copy of FirstEnergy Material Specification No. 02-700 FE is attached as Exhibit 5.

III. Violations

57. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to maintain its transmission facilities in conformance with NESC § 121(A) (requiring an EDC, during inspection and maintenance, "to put in good order or permanently disconnect" defective equipment) in that Respondent failed to identify and correct improperly installed and defective equipment during its visual inspections of its equipment and facilities located between Met-Ed Pole Nos. 70882-48106 and 70868-48110, including Phases A, B, and C, in 2008, 2011, 2013, and 2014, thereby placing the public safety in danger.

If proven, this is a violation of 52 Pa. Code § 57.193(a) (requiring an EDC to "install and maintain its transmission facilities, and ensure that its transmission facilities are operated, in conformity with the applicable requirements of the [NESC]") and 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . .

and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public" and requiring that such service and facilities "be in conformity with the regulations and orders of the Commission").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

58. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to maintain its transmission facilities in conformance with NESC § 171 (requiring an EDC to utilize "[c]ircuit breakers, circuit switchers, reclosers, switches, and fuses . . . with due regard to their assigned ratings of voltage and continuous and momentary currents") in that when Phase C made contact with the ground, Glendon Breaker 3032 tripped, but then auto-reclosed, ultimately failing to interrupt the electric current to Phase C, thereby placing the public safety in danger.

If proven, this is a violation of 52 Pa. Code § 57.193(a) (requiring an EDC to "install and maintain its transmission facilities, and ensure that its transmission facilities are operated, in conformity with the applicable requirements of the [NESC]") and 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public" and requiring that such service and facilities "be in conformity with the regulations and orders of the Commission").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

59. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to furnish and maintain adequate, efficient, safe, and reasonable service and facilities in that Respondent failed to create and implement installation procedures related to BH4 6 SOL-400 STR.CU clamps, like Clamps A, B, and C, thereby placing the public safety in danger.

If proven, this is a violation of 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

60. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to maintain its transmission facilities in conformance with NESC § 420(B)(1) (requiring employees whose duties require working on or in the vicinity of energized equipment or lines "to perform only those tasks for which they are trained, equipped, authorized, and so directed") in that Respondent did not properly train, equip, monitor, and supervise its employees and contractors in the proper installation, inspection, and maintenance of BH4 6 SOL-400 STR.CU clamps, like Clamps A, B, and C, thereby placing the public safety in danger.

If proven, this is a violation of 52 Pa. Code § 57.193(a) (requiring an EDC to "install and maintain its transmission facilities, and ensure that its transmission facilities are operated, in conformity with the applicable requirements of the [NESC]") and 66

Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public" and requiring that such service and facilities "be in conformity with the regulations and orders of the Commission").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

61. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to furnish and maintain adequate, efficient, safe, and reasonable service and facilities in that Respondent does not have any records regarding the installation of Clamps A, B, and C on Phases A, B, and C, thereby placing the public safety in danger.

If proven, this is a violation of 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

62. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to furnish and maintain adequate, efficient, safe, and reasonable service and facilities in that Respondent does not know the locations of other BH4 6 SOL-400 STR.CU clamps that were installed on its equipment and facilities, thereby placing the public safety in danger.

If proven, this is a violation of 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

63. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to furnish and maintain adequate, efficient, safe, and reasonable service and facilities in that Respondent and/or its contractors installed bronze BH4 6 SOL-400 STR.CU clamps (Clamps A, B, and C) on three (3) aluminum conductors steel-reinforced (Phases A, B, and C) inconsistent with the recommendation provided in Hubbell's General Catalog, Hubbell's Distribution Connectors Catalog, and FirstEnergy Material Specification No. 02-455 FE, thereby creating an ongoing, unsafe, and hazardous condition, which placed the public safety in danger.

If proven, this is a violation of 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000 per violation and $1,000 for each day's continuance of such violations.

Since Met-Ed does not know the installation date of the clamps, I&E proposes that the date of FirstEnergy Material Specification No. 02-455 FE, March 5, 2004, be used as the installation date of the clamps for a total of 4,526 violations[7] and a total civil penalty of $4,526,000.

64. All allegations set forth above are incorporated as if fully set forth herein. Met-Ed failed to furnish and maintain adequate, efficient, safe, and reasonable service and facilities in that Respondent did not timely de-energize Glendon Circuit 3032 on July 26, 2016, which enabled the continuation of an unsafe and hazardous condition and prevented first responders from providing aid and resuscitative measures to Thomas Poynton and fire suppression to the Poynton's residence.

If proven, this is a violation of 66 Pa.C.S. § 1501 (requiring a public utility to "furnish and maintain adequate, efficient, safe, and reasonable service and facilities" and to "make all such repairs, changes, . . . and improvements in or to such service and facilities" for the "safety of its patrons, employees, and the public").

The Bureau of Investigation and Enforcement's proposed civil penalty for this violation is $1,000.

IV. Requested Relief

65. Due to the failure of Met-Ed to create and implement procedures related to the installation of the clamps, properly install the clamps, train its employees and contractors in the proper installation of the clamps, make record of the installation of the

[7] The duration of time between the date of FirstEnergy Material Specification No. 02-455, March 5, 2004, to the date of the incident, July 26, 2016, is 4,526 days.

clamps, properly inspect the clamp connections, maintain the clamp connections, ensure the correct operation of its ground fault protection system, and timely react to the ongoing, unsafe, and hazardous condition at hand, which resulted in the electrocution, loss of life, and property damage as set forth herein, I&E proposes that Met-Ed pay a total civil penalty of Four Million, Five Hundred Thirty-Three Thousand Dollars ($4,533,000).

66. In addition to payment of the civil penalty, I&E proposes that Met-Ed be ordered by the Commission, pursuant to Section 57.197(a)(1) of the Commission's regulations, 52 Pa. Code § 57.197(a)(1), to take the following corrective actions:

> (a) Revise its Transmission and Distribution ("T&D") Construction Standards to provide for the installation of all conductor and connection installations in accordance with the manufacturer's recommendations and standards;
>
> (b) Create and implement a training program to properly train its employees and contractors in all conductor and connection installations, inspections, and maintenance, in accordance with Met-Ed's T&D Standards and the manufacturer's instructions, and require mandatory re-training on an annual basis;
>
> (c) Modify its training procedures so that employees and contractors are trained in the methods and importance of removing oxidizing agents that could cause excess corrosion and overheating;
>
> (d) Conduct a systematic review of all training and supervision to ensure that employees are trained on the contents of all field manuals and manufacturer's installation instructions and are following the instructions contained therein;
>
> (e) Increase its supervision of linemen, other field employees, and contractors so that such employees and/or contractors are properly monitored and supervised to ensure that they are following internal procedures for conductor and connection installations, inspections, and maintenance;

(f) Improve its policy for record retention of work completed on Met-Ed equipment and facilities performed by employees and contractors;

(g) Immediately create and implement a program, to be approved by the Commission, for the inspection, maintenance, repair, and replacement of any and all other conductors containing clamps and/or connectors that have been installed contrary to the manufacturer's instructions and defective ground fault protection equipment, which shall be completed within one year from the date of entry of a Final Order of the Commission;

(h) Improve its procedures to respond effectively and efficiently to 911 dispatches and requests to de-energize its equipment and facilities;

(i) Create and implement a Qualification Program, which shall include the following provisions, *inter alia*:

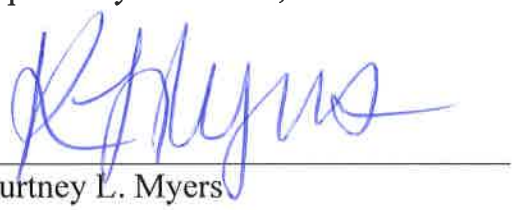
1. Identify covered tasks;[8]
2. Ensure through evaluation that individuals performing covered tasks are qualified;
3. Allow individuals that are not qualified, pursuant to this program, to perform a covered task if directed and observed by an individual that is qualified;
4. Evaluate an individual if the EDC has reason to believe that the individual's performance contributed to an accident or injury;
5. Evaluate an individual if the EDC has reason to believe that the individual is no longer qualified to perform a covered task;
6. Communicate changes that affect covered tasks to individuals performing those covered tasks;
7. Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed; and
8. Provide training, as appropriate, to ensure that individuals performing covered tasks have the necessary knowledge and skills to perform the tasks in a manner that ensures the safe operation of electric distribution and transmission facilities; and

[8] A covered task is defined as an operations or maintenance task performed on an electric distribution or transmission facility that affects the operation or integrity of the electric distribution or transmission facility.

(j) Grant such other further relief as the Commission deems just and reasonable.

WHEREFORE, the Pennsylvania Public Utility Commission's Bureau of Investigation and Enforcement hereby requests that the Commission: (1) find Respondent to be in violation of the Pennsylvania Code, National Electric Safety Code, and/or Public Utility Code for each of the counts set forth herein; (2) impose a cumulative civil penalty upon Respondent in the amount of Four Million, Five Hundred Thirty-Three Thousand Dollars ($4,533,000); (3) direct Respondent to perform each of the corrective actions detailed in this Complaint; and (4) order such other remedies as the Commission may deem appropriate.

Respectfully submitted,



Kourtney L. Myers
Prosecutor
PA Attorney ID No. 316494

Michael L. Swindler
Deputy Chief Prosecutor
PA Attorney ID No. 43319

Pennsylvania Public Utility Commission
Bureau of Investigation and Enforcement
P.O. Box 3265
Harrisburg, PA 17105-3265
717.705.4366
komyers@pa.gov

Date: July 22, 2019

EXHIBIT 1

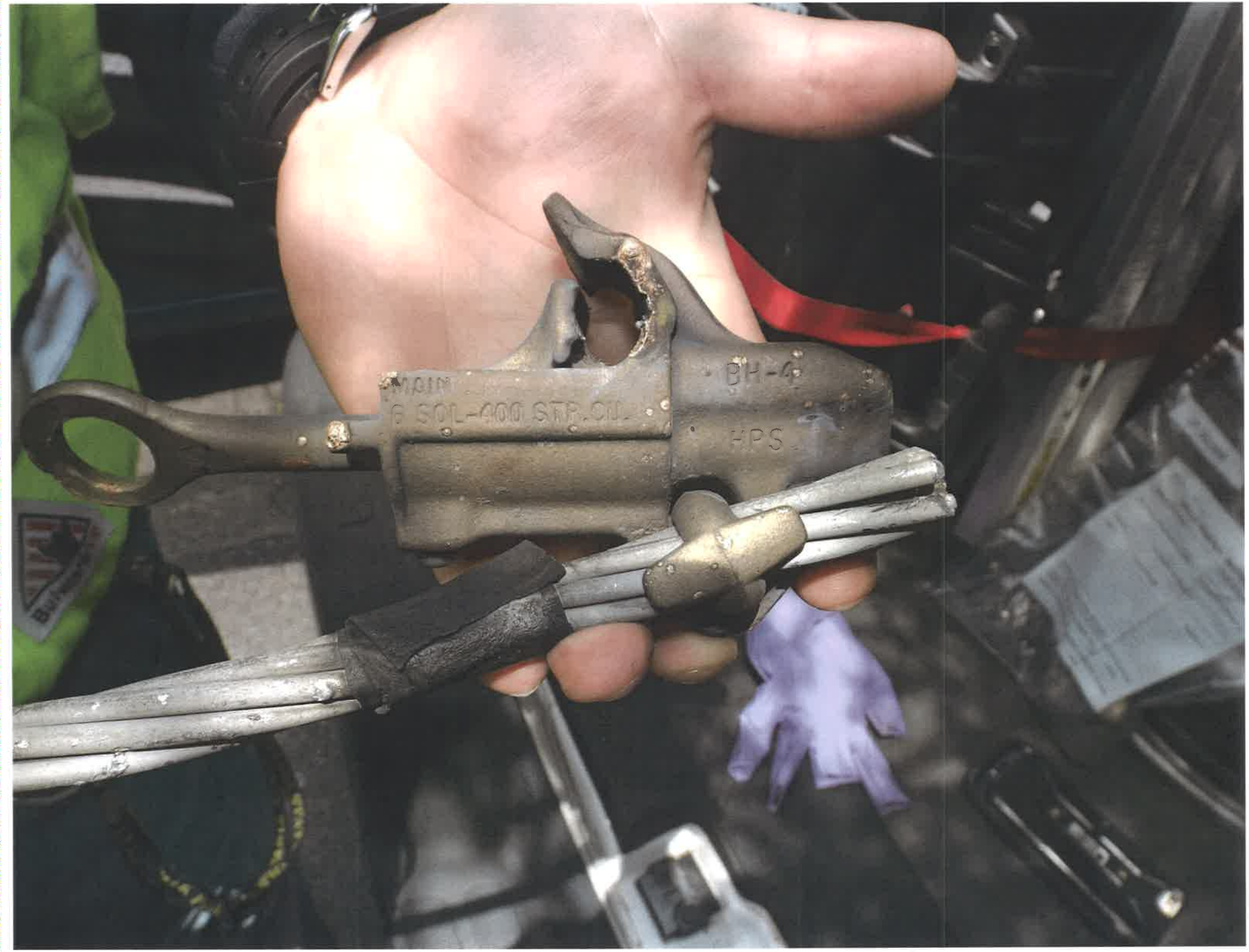

BH-4
HPS

EXHIBIT 2

HOT LINE AND STIRRUP CONNECTORS

BRONZE ENERGIZED LINE CLAMP
TYPES BC/BH

BRONZE
BC/BH

FIGURE 1

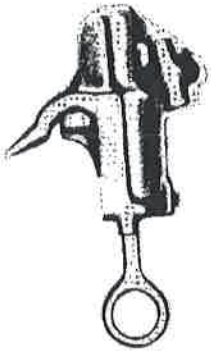


FIGURE 2

For copper conductor.

For installation on energized conductor.

Material: Body, Keeper and Eyebolt—
BC/BH—Bronze alloy
BC/BH—FTP—Bronze alloy—tin plated
Eyestem—Bronze alloy, Forged
Spring (on eyetsem)—Stainless steel
Hex Nut—BH—Silicon bronze
BC/BH—FTP—Silicon bronze—tin plated
Washer—BH—Silicon bronze
BC/BH—FTP—Galvanized steel

Note: For connector with sealant in main jaw and plastic bag, add suffix "-XB" to catalog number.

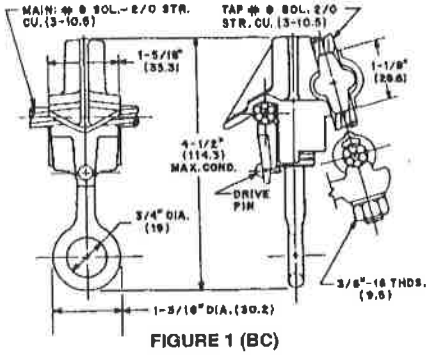


FIGURE 1 (BC)

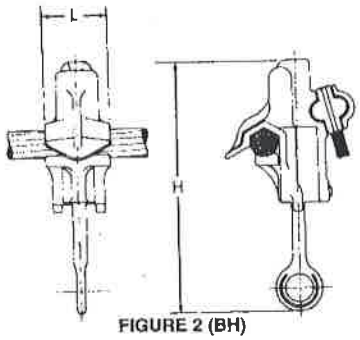


FIGURE 2 (BH)

CATALOG NUMBER	FIG. NO.	COPPER CONDUCTOR RANGE (AWG OR MCM)		DIMENSIONS INCHES (MM)		APPROX. WT. EACH LBS. (KG)
		MAIN	TAP	L	H	
BC-2/0	1	#8 Sol.—2/0 Str.	#8 Sol.—2/0 Str.	1-1/4 (31.7)	5.0 (127.0)	.7 (.32)
BC-2/0-FTP*	1	#8 Sol.—2/0 Str.	#8 Sol.—2/0 Str.	1-1/4 (31.7)	5.0 (127.0)	.7 (.32)
BH-4	2	#6 Sol.—400 MCM	#6 Sol.—4/0 Str.	1-3/8 (34.92)	6-3/4 (171.45)	1.71 (.78)
BH-4FTP*	2	#6 Sol.—400 MCM	#6 Sol.—4/0 Str.	1-3/8 (34.92)	6-3/4 (171.45)	1.72 (.78)

* Suffix "FTP" indicates item is bright tin plated.

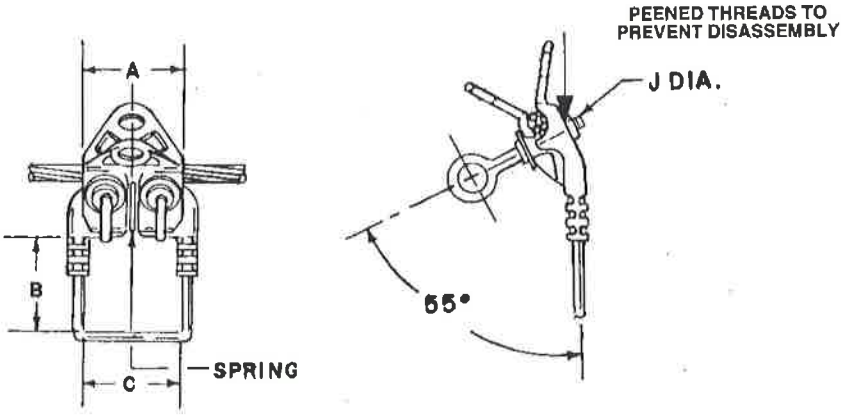
ALUMINUM SPRING LOADED "LINE SNAPPER" STIRRUP CLAMPS TYPE ESC

ALUMINUM
ESC

- Two bolt stirrups have clip type springs to apply moderate pressure on the jaws as they are pushed onto the line. This pressure is enough to allow the assembly to support its own weight on the line while one of the eyestems is snugged down. Lifting eyes are provided on both jaws and eyestems are standard. The angular relationship between stirrup and tightening bolts is an easy approach position for making installation leaving the stirrup hanging straight down.

Material: Castings—aluminum alloy
Stirrups—copper rod—tin plated
Eyestems—bronze alloy tin plated
Spring—stainless steel

Notes: Factory inhibited and bagged, add "-XB"



CATALOG NUMBER	MAIN CONDUCTOR RANGE	STIRRUP NOM. WIRE SIZE	DIMENSIONS INCHES (MM)				APPROX. WT. 100 LBS. (KG)
			A	B	C	J	
ESC-2/0-2	6 Sol.-2/0 Str. #6 ACSR-2/0 ACSR .162"-.447" O.D.	2 Sol.	3-3/8 (85.8)	3-1/4 (82.5)	4 (101.6)	3/8 (9.6)	140 (63)
ESC-500-2/0	2/0 Str.-500 Str. 1/0 ACSR-477(18/1)ACSR .398"-.814" O.D	2/0 Sol.	4 (101.6)	3-1/2 (88.9)	4-1/2 (114.3)	1/2 (12.7)	247 (112)

PROCEDURE #3—COMPRESSION CONNECTIONS

1. Vigorously clean the conductor contact area with a stainless steel brush. Do not attempt to clean connector barrel. It is not necessary to apply sealant to the conductor. All connectors will have sealant applied at the factory.
2. Fully insert the conductor into the barrel and crimp. Crimping should begin nearest the center of sleeve type connectors. For closed barrel type connectors crimping should begin at the end and work toward the open end. Excess sealant squeezed out of the joint may be smoothed out around the mouth of the barrel. All excess sealant must be removed from EHV Connectors or any cable insulation.

Installation Recommendations for Aluminum to Copper Connections Using Aluminum Connectors

Connectors with contact sealant—Aluminum connectors can be used for making aluminum to copper connections if the proper installation care is observed. This includes the use of a sealant in accordance with practices outlined above. Use of a sealant protects the connection from oxide formation and electrolytic corrosion for as long as it remains present in the connection completely coating the surfaces and sealing out moisture.

Added protection in addition to sealants is available. Aluminum distribution connectors can be supplied with plating or with copper lined contacts.

Bi-Metallic Transition Plates-Aluminum to copper connections between flat NEMA drilled tongues and bars can be made using transition plates (Type TP). These plates are formed from sheets of 80% aluminum 20% copper which are molecularly bonded together. Best results are obtained by using contact sealant. Always position the aluminum conductor above the copper conductor.

Tin Plating—Tin plating can be furnished on certain connectors by adding suffix "-GP" to the catalog number, aluminum distribution.

Hardware—Anodized Aluminum Clamping Bolts are standard with most Aluminum Power Connectors and may be supplied at extra cost with other connectors. The bolts are fabricated 2024-T4 aluminum and are anodized. After anodizing, the coating is sealed with a dichromate solution which imparts a yellow-green finish.

Standard nuts furnished on aluminum bolts are 6061 T6 dry waxed coated.

Insulator attachment hardware for bus supports is galvanized steel.

BRONZE AND COPPER CONNECTORS

Copper Casting Alloys

Our modern, all electric furnaces provide copper alloy castings of the highest quality possible. The alloy used will vary according to the requirement of the component.

Connectors requiring high tensile strength and corrosion resistance in application are cast from Anderson Alloy 112 (ASTM B-30 Alloy No. C95500). The 112 alloy is a 10% aluminum, 4.5% nickel copper alloy with a minimum tensile strength of 90,000 PSI.

Connectors requiring current-carrying abilities and reasonable strength are cast from Anderson Alloy 123 (ASTM B-30 Alloy No. C84400). The 123 metal is a 81% copper—3% tin—7% lead—9% zinc alloy.

For heavy duty copper compression connectors CDA 110 copper is used. This 110 alloy is 99.9% pure copper.

Other copper compression connectors are made from commercially pure high conductivity wrought copper.

Conductivity is purposely omitted in the above descriptions because it is often confused with current-carrying capacity. While connector alloys may vary in conductivity, design parameters are applied in each case to assure adequate capacity. While connector alloys may vary in conductivity, design parameters are applied in each case to assure adequate capacity to meet the particular application.

Installation Recommendations for Bronze and Copper Connectors

Bronze Bolted Connectors—Contact sealants are not normally required in copper connections. However, the use of sealant is recommended in severe corrosive environments and direct burial applications such as ground grids.

Vigorously clean the conductor and connector contact surfaces with a stainless steel wire brush.

Alternately and evenly tighten bolts with a torque wrench to the values shown in Recommended Torque Values table.

Hardware—Silicon bronze hardware is normally supplied for all conductor clamping bronze components. Stainless steel hardware may be substitued where and when necessary.

Copper Compression Connections—Vigorously clean the conductor contact surfaces with a stainless steel wire brush. Do not attempt to clean connector barrel. In general it is not necessary to apply sealant to the conductor or connectors. Copper connectors requiring sealant have the sealant applied at the factory. The use of sealant is recommended in severe corrosive environments and direct burial applications such as ground grids. Sealants may be designated for a copper connector by adding the appropriate suffix to the basic catalog number.

Installation Recommendations for Copper to Aluminum Connectors Using Copper Connectors

When making copper to aluminum connections, using bronze or copper connectors, best results will be obtained by using the following methods.

1. Tin plate the copper base connection and use sealant between the aluminum and copper. (Tin plating may be specified by adding suffix "-TP" to bronze and copper connectors).
2. Copper pad connectors may be attached directly to an aluminum pad if sealant is freely used.
3. The use of an aluminum conductor in a standard copper base connector (plated or unplated), is not recommended.
4. An aluminum to copper cable transition may be made directly using an aluminum connector as covered in the preceding section on Aluminum Connectors.

Note With Any Transition Method:
Do Not Position The Aluminum Member In Such A Way That Would Allow Water To Drain From The Copper Connector Over (Or Into) The Aluminum Connection Point.

General Information on Bronze or Copper Connectors

In regard to bolted connectors; components to be in contact with cable and tube are supplied with "as cast" surfaces. Conductor grooves for cables are designed with ample radii to prevent conductor damage.

Connector Design—In all of our bronze and aluminum power connectors, the temperature rise of the connector shall not exceed the temperature rise of the conductor with which it is intended to be used. The temperature rise of an electric power connector which connects conductors of varying sizes shall not exceed the temperature rise of the conductor having the highest temperature rise. All temperatures are based on the conductor being rated at 30 degrees rise over a 40 degrees ambient, indoors, in still but unconfined air. Our bronze and aluminum connectors conform to one of the following as applicable:

NEMA Standard Publications No. CC-1-1993
CC-3-1973 (ANSI C119.4-1976)
U.L. 486

Contact Sealants—Various sealant formulations have been developed to provide improved electrical and mechanical performance as well as environmental protection to the contact area. Non-petroleum base sealants are provided for underground applications and other applications where natural or synthetic rubber goods might be adversely affected.

The use of sealants are recommended for aluminum to aluminum or aluminum to copper connections which are subjected to severe corrosive environments and when used in direct burial applications such as ground grids.

Non-gritted sealants are recommended for flat connections and as a groove sealant in bolted connectors.

Our gritted sealants are primarily used in compression connectors. Aluminum compression connectors have sealant applied at the factory.

Aluminum stud connectors are supplied with factory applied sealant in the threaded portion. To obtain factory applied sealant in other connectors add the desired sealant suffix designation to the basic catalog number. Example: ACF-6-C-XB

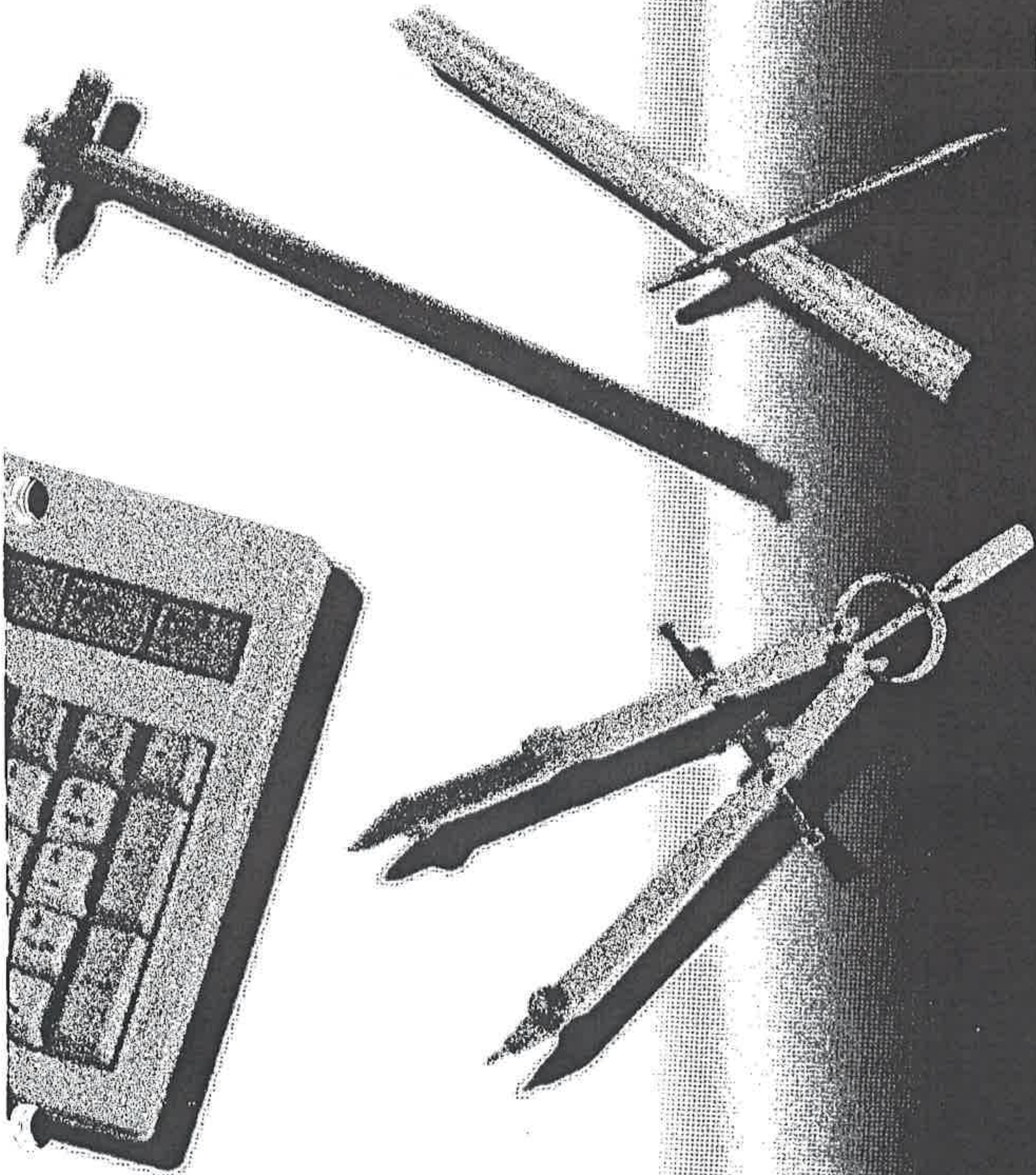
"-XB" for petroleum based sealant

HUBBELL **ANDERSON**™

POWER SYSTEMS

Reference Data

SECTION J



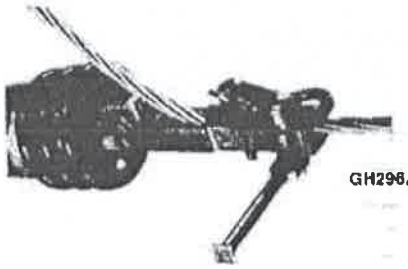
ISO 9001-1994
Cert. No. A5660
Anderson Electrical
Products, Inc.
Leeds, AL USA

EXHIBIT 3

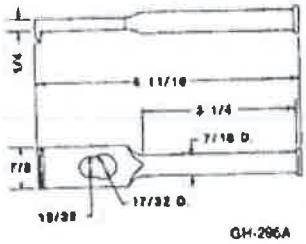
DISTRIBUTION CONNECTORS

HUBBELL POWER SYSTEMS, INC.

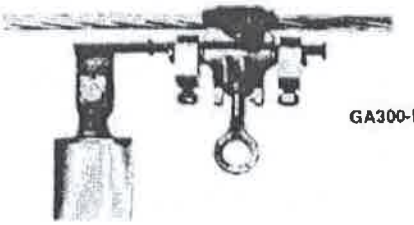
OVERHEAD PRIMARY TAPS
ADDITIONAL ACCESSORIES
ALUMINUM AND BRONZE
STIRRUPS



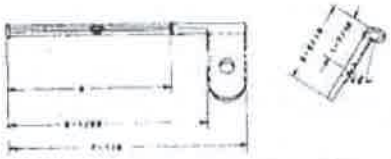
GH296A (ALUMINUM)



GH-296A



GA300-FSK (BRONZE)



GA-300-FSK

GH280C-30 (BRONZE)

GH-280C-30

GH280AX (ALUMINUM)

GH280CX (BRONZE)

GH-280

GH282, GH284 AND GH286 (COPPER)

GH-282 ¼" Dia. Copper Rod
GH-284 ⅜" Dia. Copper Rod
GH-286 ½" Dia. Copper Rod

OVERHEAD PRIMARY TAPS
HOT LINE TAP CLAMPS
BRONZE

BRONZE
BC/BH

For copper conductor.

For installation on energized conductor.

Material: Body, Keeper and Eyebolt—
BC/BH—Bronze alloy
BC/BH—FTP—Bronze alloy —tin plated
Eyestem—Bronze alloy, Forged
Spring (on eyelsem)—Stainless steel
Hex Nut—BH—Silicon bronze
BC/BH—FTP—Silicon bronze —tin plated
Washer—BH—Silicon bronze
BC/BH—FTP—Galvanized steel

Note: For connector with sealant in main jaw and plastic bag, add suffix "-XB" to catalog number.

See GH-101 for BH-4 Alternate

FIGURE 1

FIGURE 2

FIGURE 3

DC 7

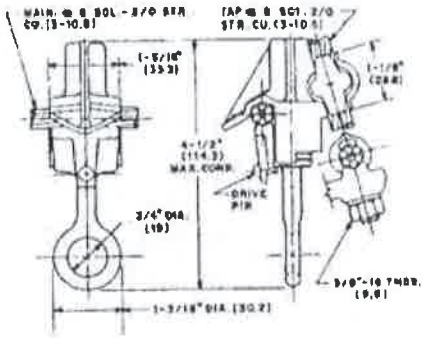


FIGURE 1 (BC)

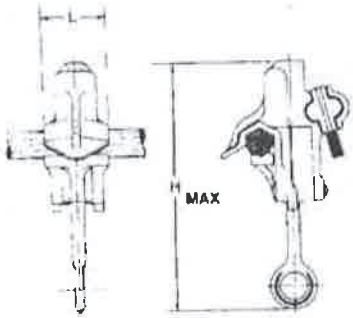


FIGURE 2 (BH)

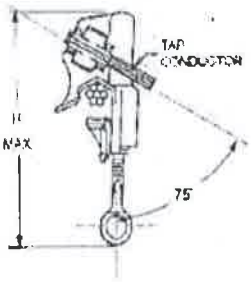


FIGURE 3 (S1540CC)

CATALOG NUMBER	MAIN LINE	TAP	FIG. NO.	PLATING	PACKAGING	CONDUCTOR RANGE (AWG OR KCMIL) MAIN	CONDUCTOR RANGE (AWG OR KCMIL) TAP	DIMENSIONS INCHES (MM) L	DIMENSIONS INCHES (MM) H	APPROX. WT. EACH LBS. (KG)
BC-2/0**	CU	CU	1	None	Box	#6 Sol – 2/0 Str.	#8 Sol – 2/0 Str.	**1-1/4** (31.7)	**5.0** (127.0)	**0.7** (.32)
BC-2/0XB**	CU	CU	1	None	Inhib & Bag					
BC-2/0FTP	CU	CU	1	Tin plated	Box					
BC-2/0FTPXB	CU	CU	1	Tin plated	Inhib & Bag	—.128 - .414— (3.25 - 10.54)				
BH-4	CU	CU	2	None	Box	#6 Sol – 400	#6 Sol – 4/0 Str.	**1-3/8** (34.92)	**6-3/4** (171.45)	**1.71** (.78)
BH-4XB	CU	CU	2	None	Inhib & Bag					
BH-4FTP	CU	CU	2	Tin plated	Box	—.162 - .745— (4.12 - 18.96)	—.162 - .547— (4.12 - 13.92)			
BH-4FTPXB	CU	CU	2	Tin plated	Inhib & Bag					
***S1540CC**	CU	CU	3	None	Box	4/0 Str. - 800	#4 Sol-350	**1-7/8** (48)	**8-1/4** (210)	**2.03** (.92)
***S1540GP**	CU	CU	3	Tin plated	Box	—.502 - 1.031— (12.78 - 26.24)	—.198 - .703— (5.04 - 17.89)			

*For factory grease, replace "S" prefix with "P".
**RUS Listed

C. For welded connectors with a copper lined contact:
   1. Firmly bolt the copper lined contact section of connector to the mating contact surface or to a suitable heat sink prior to welding. This prevents damage to the bonded liner.
   2. Weld the aluminum connection in accordance with steps A or B above. If a heat sink is used, allow connector to cool before removing. The connector may be cooled by quenching in water.

PROCEDURE #3—COMPRESSION CONNECTIONS

1. Vigorously clean the conductor contact area with a stainless steel brush. Do not attempt to clean connector barrel. It is not necessary to apply sealant to the conductor. All connectors will have sealant applied at the factory.
2. Fully insert the conductor into the barrel and crimp. Crimping should begin nearest the center of sleeve type connectors. For closed barrel type connectors crimping should begin at the end and work toward the open end. Excess sealant squeezed out of the joint may be smoothed out around the mouth of the barrel. All excess sealant must be removed from EHV Connectors or any cable insulation.

Installation Recommendations for Aluminum to Copper Connections Using Aluminum Connectors

Connectors with contact sealant—Aluminum connectors can be used for making aluminum to copper connections if the proper installation care is observed. This includes the use of a sealant in accordance with practices outlined above. Use of a sealant protects the connection from oxide formation and electrolytic corrosion for as long as it remains present in the connection completely coating the surfaces and sealing out moisture.

Added protection in addition to sealants is available. Aluminum distribution connectors can be supplied with plating or with copper lined contacts.

Bi-Metallic Transition Plates-Aluminum to copper connections between flat NEMA drilled tongues and bars can be made using transition plates (Type TP). These plates are formed from sheets of 80% aluminum 20% copper which are molecularly bonded together. Best results are obtained by using contact sealant. Always position the aluminum conductor above the copper conductor.

Tin Plating—Tin plating can be furnished on certain connectors by adding suffix "-GP" to the catalog number, aluminum distribution.

Hardware—Anodized Aluminum Clamping Bolts are standard with most Aluminum Power Connectors and may be supplied at extra cost with other connectors. The bolts are fabricated 2024-T4 aluminum and are anodized. After anodizing, the coating is sealed with a dichromate solution which imparts a yellow-green finish.

Standard nuts furnished on aluminum bolts are 6061 T6 dry waxed coated.

Insulator attachment hardware for bus supports is galvanized steel.

BRONZE AND COPPER CONNECTORS

Copper Casting Alloys

Our modern, all electric furnaces provide copper alloy castings of the highest quality possible. The alloy used will vary according to the requirement of the component.

Connectors requiring high tensile strength and corrosion resistance in application are cast from Anderson Alloy 112 (ASTM B-30 Alloy No. C95500). The 112 alloy is a 10% aluminum, 4.5% nickel copper alloy with a minimum tensile strength of 90,000 PSI.

Connectors requiring current-carrying abilities and reasonable strength are cast from Anderson Alloy 123 (ASTM B-30 Alloy No. C84400). The 123 metal is a 81% copper—3% tin—7% lead—9% zinc alloy.

For heavy duty copper compression connectors CDA 110 copper is used. This 110 alloy is 99.9% pure copper.

Other copper compression connectors are made from commercially pure high conductivity wrought copper.

Conductivity is purposely omitted in the above descriptions because it is often confused with current-carrying capacity. While connector alloys may vary in conductivity, design parameters are applied in each case to assure adequate capacity. While connector alloys may vary in conductivity, design parameters are applied in each case to assure adequate capacity to meet the particular application.

Installation Recommendations for Bronze and Copper Connectors

Bronze Bolted Connectors—Contact sealants are not normally required in copper connections. However, the use of sealant is recommended in severe corrosive environments and direct burial applications such as ground grids.

Vigorously clean the conductor and connector contact surfaces with a stainless steel wire brush.

Alternately and evenly tighten bolts with a torque wrench to the values shown in Recommended Torque Values table.

Hardware—Silicon bronze hardware is normally supplied for all conductor clamping bronze components. Stainless steel hardware may be substituted where and when necessary.

Copper Compression Connections—Vigorously clean the conductor contact surfaces with a stainless steel wire brush. Do not attempt to clean connector barrel. In general it is not necessary to apply sealant to the conductor or connectors. Copper connectors requiring sealant have the sealant applied at the factory. The use of sealant is recommended in severe corrosive environments and direct burial applications such as ground grids. Sealants may be designated for a copper connector by adding the appropriate suffix to the basic catalog number.

Installation Recommendations for Copper to Aluminum Connectors Using Copper Connectors

When making copper to aluminum connections, using bronze or copper connectors, best results will be obtained by using the following methods.

1. Tin plate the copper base connection and use sealant between the aluminum and copper. (Tin plating may be specified by adding suffix "-TP" to bronze and copper connectors).
2. Copper pad connectors may be attached directly to an aluminum pad if sealant is freely used.
3. The use of an aluminum conductor in a standard copper base connector (plated or unplated), is not recommended.
4. An aluminum to copper cable transition may be made directly using an aluminum connector as covered in the preceding section on Aluminum Connectors.

Note With Any Transition Method:
Do Not Position The Aluminum Member In Such A Way That Would Allow Water To Drain From The Copper Connector Over (Or Into) The Aluminum Connection Point.

General Information on Bronze or Copper Connectors

In regard to bolted connectors; components to be in contact with cable and tube are supplied with "as cast" surfaces. Conductor grooves for cables are designed with ample radii to prevent conductor damage.

Connector Design—In all of our bronze and aluminum power connectors, the temperature rise of the connector shall not exceed the temperature rise of the conductor with which it is intended to be used. The temperature rise of an electric power connector which connects conductors of varying sizes shall not exceed the temperature rise of the conductor having the highest temperature rise. All temperatures are based on the conductor being rated at 30 degrees rise over a 40 degrees ambient, indoors, in still but unconfined air. Our bronze and aluminum connectors conform to one of the following as applicable:

NEMA Standard Publications No. CC-1-1993
CC-3-1973 (ANSI C119.4-1976)
U.L. 486

Contact Sealants—Various sealant formulations have been developed to provide improved electrical and mechanical performance as well as environmental protection to the contact area. Non-petroleum base sealants are provided for underground applications and other applications where natural or synthetic rubber goods might be adversely affected.

The use of sealants are recommended for aluminum to aluminum or aluminum to copper connections which are subjected to severe corrosive environments and when used in direct burial applications such as ground grids.

Non-gritted sealants are recommended for flat connections and as a groove sealant in bolted connectors.

Our gritted sealants are primarily used in compression connectors. Aluminum compression connectors have sealant applied at the factory.

Aluminum stud connectors are supplied with factory applied sealant in the threaded portion. To obtain factory applied sealant in other connectors add the desired sealant suffix designation to the basic catalog number. Example: ACF-6-C-XB

"-XB" for petroleum based sealant

EXHIBIT 4

FirstEnergy	Clamp, Hot Line, Bronze		Section: 2 - Conductors Connectors & Sleeves Group: ClampSpec#: 02-455 FE

Caution! Document undergoing revisions.

Spec No.	02-455 FE
Sheet	1 of 3
Date	03-05-04
Rev. Date	10-28-08

CLAMP
HOT LINE

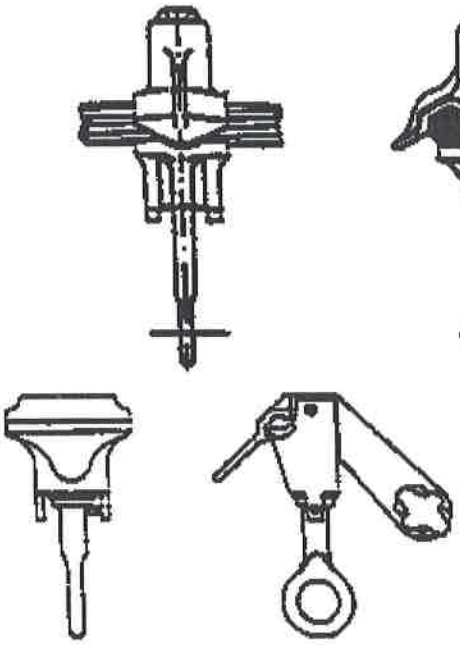


FIGURE 1

FIGURE 2

I. SCOPE

This specification covers the clamp used for installing distribution class tap connections. The clamp is used on copper or copperweld conductors or with stirrups.

II. REFERENCES

A. All clamps supplied under this specification shall be in accordance with the following standards, except where noted in this specification.

ANSI C119.4 - Connectors for Use Between Aluminum or Aluminum-Copper Overhead Conductors

B. When an American National Standard or other reference document referred to in this specification is superseded by an approved revision, the revision shall apply.

III. CHARACTERISTICS

A. The clamp shall be made of bronze alloy, shall be spring loaded and have the eye screw threads protected from ice and contamination.

B. The clamp shall be suitable for installation with all makes of hot sticks.

C. The clamp shall be designed to guide the conductor for easy initial contact and to center the conductor in the jaw of the clamp. The clamp shall not allow the conductor to be clamped in the back or front of the jaw.

D. The clamp shown in FIGURE 2, shall accommodate either spade or pin terminals of current limiting fuses, as well as solid or stranded copper or copperweld tap conductors. Tap position shall be located to provide adequate room for installation tools, as well as vertical fuse alignment.

Spec No.	02-455 FE
Sheet	2 of 3
Date	03-05-04
Rev. Date	10-28-08

III. CHARACTERISTICS (CONTINUED)

E. The hex nut used to tighten the tap eye bolt shall be 9/16".

F. Manufacturer's name or logo along with catalog number, conductor ranges of both the run and tap conductor, shall appear permanently on all clamps.

G. The clamp shall meet the requirements as shown in TABLE 1.

TABLE 1

COPPER CONDUCTOR RANGE				FIGURE	
RUN		TAP			
SIZE	DIAMETER	SIZE	DIAMETER		
#8 Sol-2/0 Str.	.129-.414"	#8 Sol-2/0 Str.	.129-.419"	1	
#6 Sol-400 KCMIL	.162-.728"	#6 Sol-4/0 Sol	.162-.528"	1	
#4 Str-2/0 Str.	.232-.419"	#8 Sol-2/0 Str.or CurrentLimiting FuseSpade/Pin Terminal	.129-.419"	2	

IV. SHIPPING

Each shipping carton, box, etc. shall be clearly marked with the manufacturer's name, catalog number and the number of pieces contained therein.

Spec No.	02-455 FE
Sheet	3 of 3
Date	03-05-04
Rev. Date	10-28-08

V. APPROVED MANUFACTURERS

MATERIALNUMBER	ITEMTYPE	APPROVEDMANUFACTURER	CATALOGNUMBER	
22104793	Figure 1(Small)	Chance/Hubbell Anderson/Hubbell Anderson/Hubbell Fargo/Hubbell MacLean	S1520CC BC20BC20XB GH-100 C1520	← ←
22105093	Figure 1(Large)	Chance/HubbellAnderson/HubbellFargo/Hubbell	S1530CC BH-4GH-101P	
				←
2756	Figure 2	Fargo/Hubbell Richards Mfg.	GH-201L BHLC-201	←

DATE	REVISION DESCRIPTION
10-28-08	Revised Catalog Numbers and eliminated 2757.

End of Specification:

Created: 10/28/2008 at 10:17 AM

Last Revised: 10/21/2009 at 12:06:32 AM

EXHIBIT 5

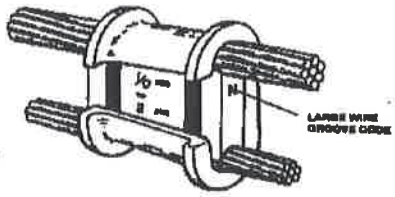
FirstEnergy	Wedge Tap, Aluminum		Section: 2 - Conductors Connectors & Sleeves Group: ConnectorSpec#: 02-700 FE

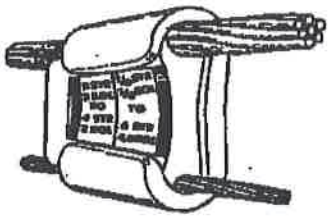
Spec No.	02-700 FE
Sheet	1 of 13
Date	05-01-07
Rev. Date	

CONNECTOR

WEDGE TYPE TAP

ALUMINUM





I. SCOPE

This specification covers aluminum connectors used for tapping overhead conductors. These devices can be used for conductor combinations including AAC, AAAC, ACAR, ACSR, ACSR/AW, AW and copper.

II. REFERENCES

All conductors supplied under this specification shall be in accordance with the latest revision of the following standard, except where noted in this specification.

ANSI C119.4 - Connectors for use Between Aluminum or Aluminum-Copper Overhead Conductors

III. CHARACTERISTICS

A. The connector shall consist of two parts: a heat treated "C" shaped member and a grooved wedge. Inhibitor shall be placed in the wedge grooves and the "C" members by the manufacturer.

B. The copper wire shall always be placed in the lower groove (tap) location. These connectors shall be suitable for aluminum to aluminum and aluminum to copper. They are not suitable for copper to copper except in non-corrosive environments.

C. The taps shall be color coordinated with the type of shell used for installation (i.e. a while shell is used to install a white tap).

D. The wire diameter limits of TABLE 1 shall be used for the design and fabrication of the actual connectors. I.E. if the two conductors to be connected have

their respective wire sizes fit in the large and small groove ranges and if the sum of the diamters of the two conductors also fit in the range of the sum of diameters, the connector shall fit properly.

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III. CHARACTERISTICS (Cont.)

F. All connectors shall be totally compatible with AMP fire-on wedge tooling.

IV. TESTS

Tests shall be performed as specified in ANSI C119.4.

V. SHIPPING

A. Connectors shall be suitably packaged to provide protection during shipping and handling.

B. Cartons/boxes shall be marked with a catalog number, manufacturer's name and the number of parts contained therein.

VI. APPROVED PLANT LOCATIONS

All products manufacturered according to this specification shall only be supplied from plant locations approved in this specification.

The approved plant location is Markham, Ontario, Canada.

TABLE 1 WIRE DIAMETER LIMITS

SMALL WIRE RANGE TAPS (Red Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
27589	600535	0.416	0.297	0.258	0.162	0.162	0.128

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TABLE 1 WIRE DIAMETER LIMITS (cont')

TYPE II TAPS (White Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
95912304	602283	0.724	0.583	0.398	0.257	0.398	0.257
95912574	602283-1	0.656	0.515	0.398	0.257	0.330	0.204
95912494	602283-2	0.602	0.464	0.398	0.257	0.258	0.162
95912144	602283-3	0.530	0.410	0.330	0.204	0.258	0.162
95913974	602283-4	0.456	0.331	0.258	0.162	0.230	0.162
18687	602283-8	0.416	0.297	0.258	0.162	0.162	0.128

MEDIUM WIRE RANGE TAPS (Blue Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
95912224	600403	0.796	0.621	0.500	0.324	0.464	0.257
95912654	600411	0.901	0.736	0.572	0.364	0.464	0.257
18693	600446	0.707	0.526	0.572	0.364	0.204	0.162
95913034	600447	0.761	0.570	0.572	0.364	0.258	0.204
95912734	600448	0.846	0.690	0.572	0.364	0.398	0.257
18696	600455	0.769	0.622	0.572	0.364	0.204	0.162
18697	600456	0.823	0.664	0.572	0.364	0.258	0.204
18698	600458	0.963	0.804	0.572	0.364	0.464	0.257
36713103	600459	1.013	0.858	0.572	0.364	0.572	0.364
27310	600465	1.068	0.938	0.572	0.364	0.572	0.364
95913384	600466	1.130	0.956	0.572	0.364	0.572	0.364

266.8 kcmil RANGE TAPS (Blue Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
18688	602046-3	0.972	0.818	0.650	0.525	0.330	0.257
27315	602046-4	1.052	0.897	0.650	0.525	0.500	0.324
18689	602046-5	1.104	0.963	0.650	0.525	0.562	0.364
27316	602046-6	1.159	1.015	0.650	0.525	0.562	0.409
33354942	602046-7	1.217	1.080	0.650	0.525	0.575	0.460
18690	602046-9	1.284	1.149	0.650	0.525	0.650	0.525

TABLE 1 WIRE DIAMETER LIMITS (cont')

350 kcmil RANGE TAPS (Blue Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
36713423	602380-1	0.939	0.794	0.684	0.600	0.258	0.204
20302606	602380-2	1.011	0.857	0.684	0.600	0.333	0.257
36713153	602380-3	1.1091	0.936	0.684	0.600	0.500	0.324
36713443	602380-6	1.284	1.119	0.684	0.600	0.600	0.460
36713203	602380-7	1.368	1.188	0.684	0.600	0.684	0.600

336 kcmil RANGE TAPS (Yellow Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
18724	602000	1.069	0.860	0.750	0.524	0.355	0.257
18702	602001	1.141	0.927	0.750	0.524	0.557	0.324
95913544	602002	1.190	0.967	0.750	0.524	0.619	0.364
25065	602003	1.245	1.012	0.750	0.524	0.619	0.409
18703	602004	1.306	1.063	0.750	0.524	0.630	0.460
25066	602006	1.370	1.140	0.750	0.524	0.750	0.524
33356012	602007	1.456	1.206	0.750	0.524	0.750	0.524
25070	602013	0.999	0.807	0.750	0.524	0.258	0.204
95913894	602014	0.932	0.765	0.750	0.524	0.204	0.162

477 kcmil RANGE TAPS (Yellow Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
95914194	602031-8	1.185	0.995	0.893	0.666	0.326	0.257

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TABLE 1 WIRE DIAMETER LIMITS (cont')

477 /556.5 kcmil RANGE TAPS (Yellow Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max.(In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
36713353	1-602031-2	1.854	1.692	0.950	0.722	0.950	0.722
36713253	1-602031-3	1.741	1.524	0.940	0.666	0.940	0.666
22465303	1-602031-4	1.587	1.366	0.940	0.666	0.750	0.573
20304006	1-602031-5	1.500	1.297	0.940	0.666	0.750	0.481
18705	1-602031-6	1.421	1.216	0.940	0.666	0.650	0.436
36713303	1-602031-7	1.360	1.147	0.940	0.666	0.562	0.382
33356352	1-602031-8	1.305	1.102	0.940	0.666	0.562	0.346
20302806	2-602031-0	1.247	1.115	0.940	0.666	0.326	0.257
22465503	2-602031-1	1.181	1.062	0.940	0.666	0.258	0.204
33356762	2-602031-2	1.126	1.020	0.940	0.666	0.199	0.162

795 kcmil RANGE TAPS (Yellow coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max.(In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
(18728)	602121	2.216	2.072	1.156	0.858	1.158	0.858
36713403	602121-1	2.159	2.002	1.156	0.858	1.156	0.585
25068	602121-2	2.098	1.946	1.156	0.858	1.156	0.858
20302506	602121-3	2.035	1.891	1.156	0.858	1.156	0.858
18729	602121-4	1.966	1.822	1.156	0.858	0.900	0.700
333571821	602121-5	1.891	1.747	1.156	0.858	0.900	.0700
95926954	602121-6	1.829	1.685	1.156	0.858	0.750	0.525
18719	602121-7	1.750	1.606	1.156	0.858	0.722	0.525
33355932	602121-8	1.670	1.526	1.156	0.858	0.722	0.364
18712	602121-9	1.610	1.466	1.156	0.858	0.608	0.364
18716	1-602121-0	1.555	1.411	1.156	0.858	0.608	0.364
25069	1-602121-1	1.506	1.362	1.156	0.858	0.436	0.324
33356432	1-602121-	1.434	1.290	1.156	0.858	0.398	0.257

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TABLE 1 WIRE DIAMETER LIMITS (cont')

1033.5 kcmil RANGE TAPS (Yellow Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
20302706	602180-2	2.354	2.194	1.250	0.856	1.250	0.856
20304206	602180-9	1.888	1.728	1.250	0.856	0.722	0.525

1192.5 kcmil RANGE TAPS (Yellow Coded)

MATERIAL NUMBER	CATALOG NUMBER	SUM OFDIAMETERS		LARGE GROOVEWIRE DIAMETER		SMALL GROOVEWIRE DIAMETER	
		Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)	Max. (In.)	Min. (In.)
33357422	602300	2.604	2.516	1.375	0.856	1.375	0.856
33357002	602300-4	2.353	2.253	1.375	0.856	1.375	0.856
33357342	1-602300-4	1.701	1.601	1.375	0.856	0.398	0.324

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VII. APPROVED MANUFACTURERS

SMALL WIRE TAPS (Red Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
27589	RED	#6 STR TO #8 STR	AMP	600535

TYPE II TAPS (White Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
95912304	WHITE	1/0 STR TO #2 STR	AMP	602283
95912574	WHITE	1/0 STR TO #2 STR	AMP	602283-1
95912494	WHITE	1/0 STR TO #6 SOL	AMP	602283-2
95912144	WHITE	#4 STR TO #4 STR	AMP	602283-3
95913974	WHITE	#4 STR TO 6 SOL	AMP	602283-4
18687	WHITE	#4 & 6 STR TO 8 STR	AMP	602283-8

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VII. APPROVED MANUFACTURERS (CONTINUED)

MEDIUM WIRE RANGE TAPS (Blue Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
95912224	BLUE	1/0 STR TO 1/0 STR	AMP	600403
95912654	BLUE	3/0 TO 1/0 STR	AMP	600411
18693	BLUE	3/0 STR TO #6 STR	AMP	600446
95913034	BLUE	3/0 TO #4 STR	AMP	600447
95912734	BLUE	3/0 TO #2 STR	AMP	600448
18696	BLUE	4/0 STR TO #6 STR	AMP	600455

18697	BLUE	4/0 STR TO #4 STR	AMP	600456
18698	BLUE	4/0 STR TO 1/0 ACSR	AMP	600458
36713103	BLUE	4/0 ACSR TO 2/0 ACSR	AMP	600459
95913384	BLUE	4/0 STR TO 4/0 STR	AMP	600466

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226 kcmil RANGE TAPS (Blue Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
18688	BLUE	266 ACSR TO 2 ACSR	AMP	602046-3
18689	BLUE	266 ACSR TO 2/0 ACSR	AMP	602046-5
33354942	BLUE	4/0 OR 266 ACSR TO 4/0 ACSR	AMP	602046-7
18690	BLUE	266 ACSR TO 266 ACSR	AMP	602046-9

350 kcmil RANGE TAPS (Blue Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
36713423	BLUE	336 STR TO #4 SOL	AMP	602380-1
20302606	BLUE	336 STR TO #2 STR	AMP	602380-2
36713153	BLUE	336 STR TO 1/0 ACSR	AMP	602380-3
36713443	BLUE	336 STR TO 4/0-250 STR	AMP	602380-6

36713203	BLUE	336 STR TO 336 STR	AMP	602380-7

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336 kcmil RANGE TAPS (Yellow Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
18724	YELLOW	336 ACSR OR 397 STR TO 2 STR	AMP	602000
18702	YELLOW	336 STR TO 1/0 ACSR	AMP	602001
95913544	YELLOW	336 STR TO 2/0 STR	AMP	602002
25065	YELLOW	336 STR TO 3/0 STR	AMP	602003
18703	YELLOW	397 STR TO 4/0 STR	AMP	602004
25066	YELLOW	336 OR 397 STR TO 4/0 ACSR	AMP	602006
33356012	YELLOW	336 ACSR 18/1 OR 26/7 TO SAME	AMP	602007
25070	YELLOW	336 ACSR TO #4 SOL	AMP	602013
95913894	YELLOW	336 STR TO #6 SOL	AMP	602014

477 kcmil RANGE TAPS (Yellow Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
95914194	YELLOW	477 STR TO #2 STR	AMP	602031-8

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477 /556 kcmil RANGE TAPS (Yellow Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
36713353	YELLOW	636 STR TO 636 STR	AMP	1-602031-2
36713253	YELLOW	477 ACSR/556AA TO 500AA-556AA	AMP	1-602031-3
22465303	YELLOW	556-636 STR TO 336STR	AMP	1-602031-4
20304006	YELLOW	636 STR TO 4/0 STR	AMP	1-602031-5
18705	YELLOW	397 ACSR - 556 STR TO 4/0 STR	AMP	1-602031-6
36713303	YELLOW	636 STR TO 1/0 ACSR	AMP	1-602031-7
33356352	YELLOW	477 ACSR - 636 STR TO 1/0 STR	AMP	1-602031-8
20302806	YELLOW	636 STR TO #2 STR	AMP	2-602031-0
22465503	YELLOW	636 STR TO #4 SOL/STR	AMP	2-602031-1
33356762	YELLOW	636 STR TO #6 SOL/STR	AMP	2-602031-2

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795 kcmil RANGE TAPS (Yellow coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER

36713403	YELLOW	795 STR TO 795 STR	AMP	602121-1
25068	YELLOW	636 30/7 ACSR TO SAME	AMP	602121-2
20302506	YELLOW	636 ACSR TO 636 ACSR	AMP	602121-3
18729	YELLOW	795 TO 477 KCMIL	AMP	602121-4
33357182	YELLOW	605 24/7 TO 477 18/1-500 STR	AMP	602121-5
95926954	YELLOW	750 STR TO 397 STR	AMP	602121-6
18719	YELLOW	750 STR TO 336 STR	AMP	602121-7
33355932	YELLOW	795 STR TO 4/0 ACSR	AMP	602121-8
18712	YELLOW	750 STR TO 4/0 ACSR	AMP	602121-9
18716	YELLOW	750 STR TO 2/0 ACSR	AMP	1-602121-0
25069	YELLOW	750 STR TO 2/0 STR	AMP	1-602121-1
33356432	YELLOW	636 ACSR TO 1/0 ACSR	AMP	1-602121-2

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1033.5 kcmil RANGE TAPS (Yellow Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
20302706	YELLOW	954 ACSR TO 954 ACSR	AMP	602180-2
20304206	YELLOW	954 ACSR TO 336 STR OR ACSR	AMP	602180-9

1192.5 kcmil RANGE TAPS (Yellow Coded)

MATERIALNUMBER	COLORCODE	DESCRIPTION	APPROVEDMANUFACTURER	CATALOGNUMBER
33357422	YELLOW	1192 ACSR TO 1192 ACSR	AMP	602300
33357002	YELLOW	1192 ACSR TO 795 36/1 ACSR	AMP	602300-4
33357342	YELLOW	1192 ACSR TO 1/0 STR	AMP	1-602300-4

REV. DATE	REVISION DESCRIPTION

End of Specification:

Created: 03/22/2001 at 11:17 AM
Last Revised: 05/29/2007 at 07:06:50 AM
Last Approval: 6/4/2007 at 4:25:24 PM

Pennsylvania Public Utility Commission Bureau of Investigation and Enforcement, Complainant	:	
	:	Docket No. C-2019-
v.	:	
Metropolitan Edison Company, Respondent	:	

VERIFICATION

I, Brent W. Killian, Supervisor, Electric Safety Division, Bureau of Investigation and Enforcement, hereby state that the facts above set forth are true and correct to the best of my knowledge, information, and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: July 22, 2019

Brent W. Killian
Supervisor, Electric Safety Division
Bureau of Investigation and Enforcement
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Pennsylvania Public Utility Commission Bureau of Investigation and Enforcement, Complainant	:	
	:	Docket No. C-2019-
v.	:	
Metropolitan Edison Company, Respondent	:	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing Complaint upon the parties, listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a party).

Notification by Certified Mail and Electronic Mail:

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Dated: July 22, 2019