

PRESSURE TESTING

PLUGGING ALPETH PIC CABLE

USING B PLUG COMPOUND

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1. GENERAL

1.01 This section describes the method of constructing plugs in alpeth sheath cables having polyethylene insulated conductors (PIC).

1.02 B Plug Compound is the only material recommended for the constructing of plugs in PIC cable.

1.03 Before proceeding with the operations covered herein, the workman should become familiar with the precautions, preparation of materials and other general information on B Plug Compound contained in Section G73.159.1.

2. LOCATION OF PLUG

2.01 The plug should be located in a straight section of cable to avoid severe bending strains. The plug can be made in a horizontal or vertical section of cable.

2.02 The location of a plug with reference to a splice is the same as for a resin plug in a paper or pulp insulated cable.

2.03 Where PIC cable is spliced to paper or pulp insulated cable the PIC cable should be plugged close to the junction. This is necessary to prevent low insulation resistance in the paper or pulp insulated cable due to moist air flowing from the PIC cable, or from an actual flow of water from a sheath break in the PIC cable. No plug is necessary if the entire cable is to be maintained under pressure.

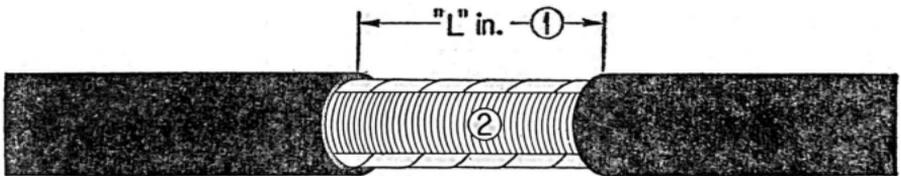
3. HORIZONTAL PLUG

3.01 The preparations for making a horizontal plug are illustrated and described in Paragraph 3.02. Particular attention is directed to the following:

- (1) Cables having an outside diameter of 1-1/4 inches or less require a 4-inch sheath opening whereas larger diameter cables require a 7-inch sheath opening. The 7-inch opening is necessary to facilitate removal of binders on inner units.
- (2) Only a portion of the aluminum tape should be removed across the sheath opening. A tape width of at least 1/3 of the cable circumference shall be retained across the sheath opening to provide a bond. Care should be taken that this bonding strip is not torn or broken during the operation of spreading the core conductors.

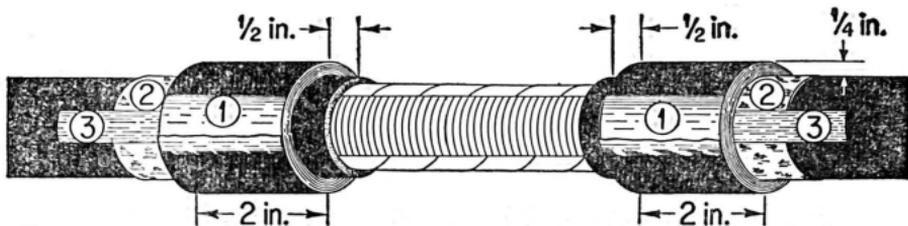
3.02 Procedure

Step 1



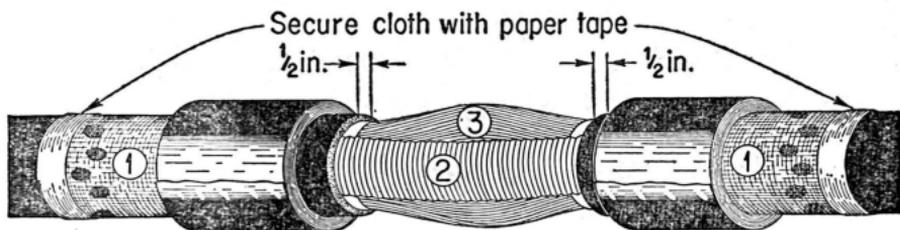
- ① Remove polyethylene sheath. For cable diameters of 1 1/4 in. or less, "L" is 4 in. For larger diameter cables "L" is 7 in.
- ② Remove aluminum tape, but leave a strip of it on side of cable for bond. Width of strip to be at least 1/3 cable circumference.

Step 2



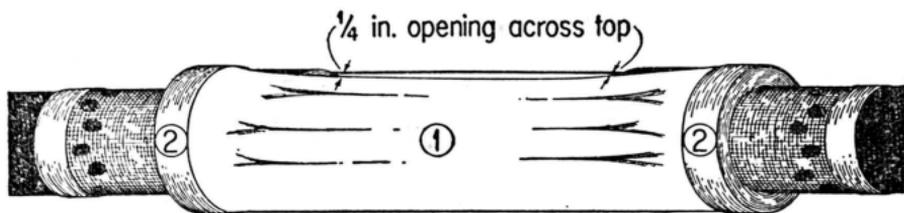
- ① Make collar of 2 in. DR Tape. Scuff sheath and coat with C Cement before applying tape.
- ② Make $1\frac{1}{2}$ wraps of B Aluminum tape, 1 in. wide.
- ③ Place 2 in. length of $\frac{1}{2}$ in. B Paper Tape

Step 3



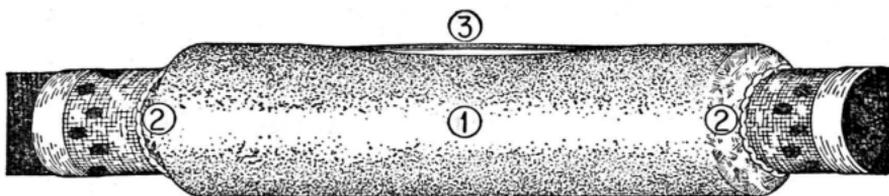
- ① Place B Wire Cloth adjacent to DR Tape collars. Place starting edge of cloth along paper tape. Secure temporarily with $\frac{1}{2}$ in. B Paper tape. Tack cloth to polyethylene sheath with soldering copper, being careful not to overheat.
- ② Stretch aluminum tape carefully to provide clearance from core.
- ③ Remove core wrapper to within $\frac{1}{4}$ in. of sheath opening. Remove any binders and spread core with orange stick.

Step 4



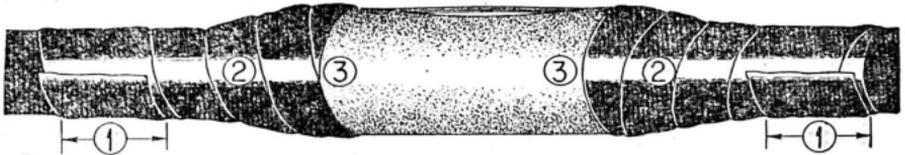
- ① Make cylinder of heavy brown wrapping paper to fit across DR Tape Collars. Leave opening of about $\frac{1}{4}$ in. across the top. Paper shall be folded in two and be 9 in. wide for 4 in. sheath opening or 12 in. wide for 7 in. sheath opening.
- ② Secure wrapping paper at outer end of each DR Tape collar with paper tape.

Step 5



- ① Place split lead sleeve, sized to fit snugly around paper cylinder. Sleeve length should be 11 in. for 4 in. sheath opening or 14 in. for 7 in. sheath opening. A slight gap up to $\frac{1}{4}$ in. is permissible in the slit. Line up the slit with the opening in paper cylinder.
- ② Beat in ends of sleeve to center of B Aluminum Tape under wire cloth. Solder sleeve to cloth.
- ③ Spread the sleeve slit to about $\frac{1}{2}$ in. gap between DR Tape collars.

Step 6



- ① Scuff sheath for 2 in. beyond wire cloth and apply C Cement.
- ② Apply double layer of half lapped 2 in. DR Tape over cemented area and on the sleeve up to inner edge of DR Tape collars ③.

3.03 Select the proper package or packages of B Plug Compound for the size of cable to be plugged. (See Part 5.) Mix the compound in the can as described in Section G73.159.1. Pour the contents of the can into the opening in the paper cylinder until the cylinder is filled. Pour into one end of the opening to lessen the possibility of air pockets.

3.04 After the paper cylinder has been filled, wait about 15 to 20 minutes and pour in additional compound if any noticeable settling has occurred. The compound usually sets up to a gumdrop consistency within that time.

3.05 Beat in the sleeve slit to about 1/4-inch gap. It is unnecessary to run the seam.

3.06 Wrap the entire sleeve with two layers of half-lapped 2-inch DR Tape, extending the tape about 1-1/2 inches beyond the existing DR Tape wrapping.

3.07 Cover the DR Tape completely with two layers of half-lapped 1-inch D Vinyl Tape. Over-all length of the completely taped plug is approximately 20 inches for cable diameters of 1-1/4 inches or less and approximately 23 inches for larger diameter cables.

4. VERTICAL PLUG

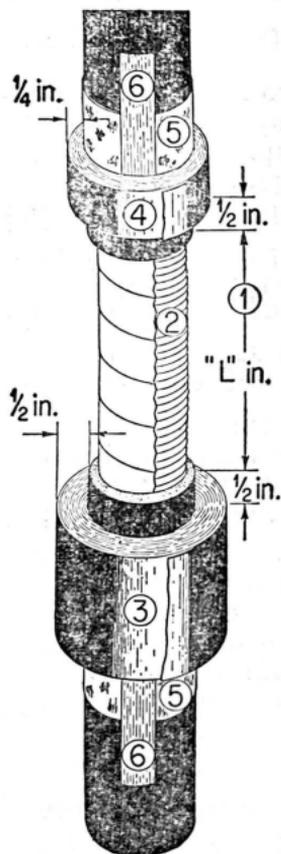
4.01 The preparations for making a vertical plug are illustrated and described in Paragraph 4.02. Particular attention is directed to the following:

- (1) Cables having an outside diameter of 1-1/4 inches or less require a 4-inch sheath opening whereas larger diameter cables require a 7-inch sheath opening. The 7-inch opening is necessary to facilitate removal of binders on inner units.

(2) Only a portion of the aluminum tape should be removed across the sheath opening. A tape width of at least $\frac{1}{3}$ of the cable circumference shall be retained across the sheath opening to provide a bond. Care should be taken that this bonding strip is not torn or broken during the operation of spreading the core conductors.

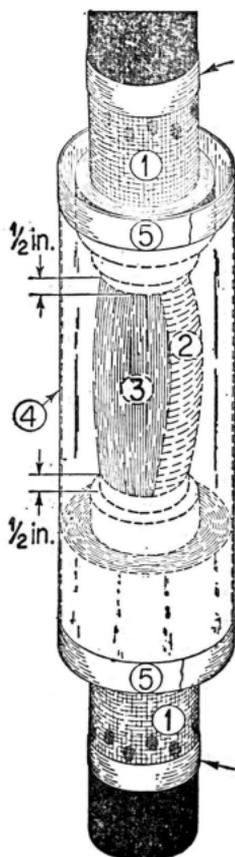
4.02 Procedure

Step 1



- ① Remove polyethylene sheath. For cable diameters of $\frac{1}{4}$ in. or less, "L" is 4 in. For larger diameter cables "L" is 7 in.
- ② Remove aluminum tape except for a strip of it on side of cable for bond. Width of strip to be at least $\frac{1}{3}$ cable circumference.
- ③ Make collar of 2 in. DR Tape $\frac{1}{2}$ in. below sheath opening. Scuff sheath and coat with C Cement before applying tape.
- ④ Make collar of $\frac{3}{4}$ in. DR Tape $\frac{1}{2}$ in. above sheath opening. Scuff sheath and coat with C Cement before applying tape.
- ⑤ Make $1\frac{1}{2}$ wraps of B Aluminum Tape 1 in. wide.
- ⑥ Place 2 in. length of $\frac{1}{2}$ in. B Paper Tape.

Step 2



Secure wire cloth
with paper tape.

- ① Place B Wire Cloth adjacent to DR Tape collars. Place starting edge of cloth along paper tape. Secure temporarily with $\frac{1}{2}$ in. B Paper Tape. Tack cloth to polyethylene sheath with soldering copper, being careful not to overheat.
- ② Stretch aluminum tape carefully to provide clearance from core.
- ③ Remove core wrapper to within $\frac{1}{4}$ in. of sheath opening. Remove any binders and spread core with orange stick.
- ④ With heavy brown wrapping paper, make two complete wraps around the lower DR Tape collar. Paper should be 8 in. wide for 4 in. sheath opening or 11 in. wide for 7 in. sheath opening.
- ⑤ Secure wrapping paper at top and bottom with paper tape.

Secure wire cloth
with paper tape

4.03 Select the proper package or packages of B Plug Compound for the size of cable to be plugged. (See Part 5.) Mix the compound in the can as described in Section G73.159.1. Pour the contents of the can or cans into the open end of the paper cylinder. Pour down one side of the cylinder to lessen the possibility of air pockets.

4.04 Continue pouring until the compound has reached the top of the upper DR Tape collar. Wait about 15 to 20 minutes and pour in additional compound if any noticeable settling has occurred.

4.05 Beat in the upper end of the sleeve to the B Aluminum Tape underneath the wire cloth. Solder the sleeve to the cloth. If a split sleeve has been used it will not be necessary to run the seam.

4.06 Scuff the sheath for 2 inches above the wire cloth and apply C Cement to the scuffed area. Apply a double layer of half-lapped 2-inch DR Tape over the cemented area and down over the lead sleeve for approximately 2 inches.

4.07 Wrap the entire sleeve with two layers of half-lapped 2-inch DR Tape, extending the tape about 1-1/2 inches beyond the existing DR Tape wrappings.

4.08 Cover the DR Tape completely with two layers of half-lapped 1-inch D Vinyl Tape. Over-all length of the completely taped plug is approximately 19 inches for cable diameters of 1-1/4 inches or less and approximately 22 inches for larger diameter cables.

5. QUANTITY OF COMPOUND REQUIRED

5.01 The quantity of B Plug Compound required to make a plug in PIC cable is determined by the cable diameter as shown in the following:

| <u>Cable Diam. (Inches)</u> | <u>Sheath Opening (Inches)</u> | <u>Quantity of Compound (Grams)*</u> |
|---------------------------------|--|--|
| Up to 0.56 | 4 | 100 |
| 0.57 to 1.25 | 4 | 200 |
| 1.26 to 1.58 | 7 | 400 |
| 1.59 to 1.86 | 7 | 500 |
| 1.87 to 2.15 | 7 | 600 |
| 2.16 to 2.50 | 7 | 700 |

* Compound is available in packages of 100 or 300 grams.