Southern Pacific Washes Insulators

IN ORDER to minimize severe interference, such as current leakage and "cross-fire" between wires on open pole lines, due to the effects of fog, combined with dust on insulators and crossarms, the Southern Pacific has adopted the practice of washing these pole line items with water pumped at high pressure from a water supply car.

A pole line, the property of the Western Union Telegraph Company, supporting approximately 70 wires of the two companies, is located along the Southern Pacific doubletrack main line which extends from Oakland, Cal., along the shore of San Francisco Bay for approximately 30 miles. Especially in a ten-mile section of this territory, industries cause dust, soot and other foreign matter to accumulate on the insulators, pins and crossarms. Comparatively little rain falls in this territory except during the early autumn months, and, therefore, this pole line gets no natural washing during the remainder of the year. In the period from the last autumn rain to the next July, a heavy coating of dust accumulates on the insulators, pins and crossarms. This dust causes very little trouble as long as it is dry.

During the latter part of July and August, this territory is subject to heavy, wet fogs which are carried by the prevailing breezes from the bay to the pole line. When the fog dampens the dust on the insulators, pins and crossarms, a path of comparatively low resistance is established, thus greatly lowering the insulation of line wires and appreciably increasing the "cross-fire" between circuits, notwithstanding the fact that great care was exercised in maintaining the same "marking-polarity" on all wires. Between midnight and 10:00 a.m., operation of high-speed multiplex telegraph circuits was previously seriously impaired.

Methods Developed

In past years, various experiments were made in an attempt to eliminate this trouble. A small-sized portable pump, operated by hand, was used by a man on a pole to spray a solution on the insulators, and then he scrubbed them with a stiff brush to remove the dust. Another plan was to replace all the dirty insulators with clean ones, then wash the dirty insulators at a central location so that they would be available again

> Ground crew directing high pressure stream of water on pole line insulators. The engine at the right supplies steam for the operation of the pump on the water car



A stream of water like this thoroughly washes the insulators in 10 minutes

for replacements. Both methods were too slow and expensive.

A method which is effective, as well as sufficiently economical to justify cleaning the entire ten-mile territory, has been developed and was used last summer with excellent results. The equipment in general is similar to that used by the maintenance of way department for fighting forest fires. A water car with 10,500-gal. capacity is handled by a switch engine. This tank car is equipped with a high-pressure pump operated by steam from the locomotive. By using a hose 3 in. in diameter and a standard nozzle, sufficient pressure is available to throw a stream of water 80 ft. high. Usually the poles are 40 ft. high, and, therefore, pressure at this height thoroughly washes the insulators and crossarms. Ordinarily the poles are not more than 50 ft. from the track so that a 75 ft. length of hose is sufficient. In some locations the poles are about 300 ft. away and extra sections of hose are required.

About 10 min. is required at each pole, and about four miles can be washed in a day. This washing is done at the beginning of the fog season, so that one washing serves to prevent trouble until the autumn rains give the pole lines a natural washing.

Under the most adverse conditions of dirty insulators and fog, the escape between high-speed telegraph wires on this line has been as much as 85 to 90 volts, and the "cross-fire" from one wire to another on adjacent positions was so pronounced that, at times, the multiplex circuits could not be operated. After the insulators have been washed, as previously explained, the escape, even during fogs, does not exceed 10 to 15 volts, and, therefore, the circuits can be operated satisfactorily.

