

BUREAU OF RECLAMATION
FACILITIES INSTRUCTIONS, STANDARDS, & TECHNIQUES
Volume 3-18

**REPLACING GLAZE
BURNED INSULATORS**

Replacing Glaze Burned Insulators

It is recommended that damaged or suspected damaged transmission line and station insulators be immediately replaced to reduce the probability of in service failures and subsequent outages.

Very few insulators are punctured in service, since a surface flashover usually occurs before puncture. When puncture does occur, it is usually the result of small cracks in porcelain started by cement growth or mechanical or thermal shock. Since a puncture usually occurs under the head of the insulator, there may be no visual evidence of the damage. The only reliable method of detecting the puncture is electrical test. The Doble test method has proven quite reliable.

Large arc burns on transmission and bus insulators indicate that the insulators have been subjected to electrical and thermal stress, which could cause complete failure at a later time. A number of transmission line suspension insulators, which had been damaged by flash burns, were tested by the Doble method, and it was found that they did not meet acceptable standards for good insulators.

In view of the comparatively low cost of line and bus insulators and the uncertainty of retaining burned insulators in service, all insulators with extensive

glaze burns should be replaced without delay.

Line and bus insulators with chips or broken skirts have been subjected to mechanical stress which may result in future failure. Because of the relatively low cost of such insulators, all insulators with evidence of mechanical damage should be removed from service and junked.

Minor glaze burns probably have little effect on the reliability of insulators. However, it is recommended that insulators with such burns be replaced, when convenient, in order to eliminate all doubt. A record should be kept of the location and extent of all flashovers.

High-voltage equipment bushings, which do not depend on the bulk porcelain for insulation strength, can be retained in service with small chips or glaze burns provided no more than one skirt is damaged, and there is no evidence of cracks in the main porcelain shell. Such damaged areas, are usually cleaned and painted with glyptal. Since a glyptal finish tends to crack after a prolonged exposure to the elements, epoxy materials have been used for this purpose, or as an adhesive to replace a piece which has broken off.