SEQUOIA® INSURANCE COMPANY

RISK ALERT

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Federal Pacific FPE Stab-lok® Circuit Breakers: Take Action Now

Circuit breakers are designed to break, or interrupt, an electrical current when there is too much current for the electrical line to carry safely, or when other unsafe conditions exist. When the circuit breaker fails to trip, uncontrolled current may flow through the system, causing overheating and increasing the risk of fire. Between the 1950s and the 1980s, about 28 million Federal Pacific Electric Stab-lok® circuit breakers and breaker panels were installed in U.S. residential and commercial buildings. By the mid-1970s, it became evident that a large number of FPE Stab-lok® breakers were failing.

What is the Problem with FPE Stab-lok®?

Experts estimate that Stab-lok® breakers and panels remain in use in at least 20 million structures in the U.S. Defective Stab-lok® breakers can remain in place for many years without attracting notice, unless they fail under the conditions when their functionality is critical; that is, when there is a current overload or short circuit.

Controversial Design. Most breaker switches have jaws that fit in parallel fashion over the bus bar. Stab-lok®'s unconventional design has a right-angle fit, which results in a small contact area, insufficient contact pressure, and spontaneous loosening; these can cause arcing and over-heating, particularly when the circuit is overloaded.

Failure to Meet Safety Standards. Stab-lok® breakers and panels do not meet the established safety standard (Underwriters Laboratories' standard UL489, *Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures*). The reported failure rate for all models of Stab-lok® breakers is around 60%. The normal failure rate for residential circuit breakers is *less than 1%*.

Serious Manufacturing Defects. Inspectors and electricians report poor quality and faulty connections in the breaker and in the panel housing, which increases the risk of malfunction, overheating, and ignition within the panel. Cases of electrical shock and other injury have been reported.

The defects in FPE Stab-lok® circuit breakers are not visually apparent, and one cannot tell by visual inspection whether the breaker is working correctly or not. Scorch marks, burns, darkened or discolored areas, and melted parts or insulation may indicate that the breakers are not functioning properly and that the situation is imminently hazardous. However, the absence of these signs *does not imply* that the circuit breakers are free from defect and functioning properly.

FPE Stab-lok® products are labeled with various brand names, depending on when they were manufactured and where they were distributed. Look for any of the following names, alone or in combination:

Federal Electric or FPE	FPE-Stab-Lok or Stab-Lok
Federal Pacific Electric	Federal NOARC or Federal NOARK
Federal Pioneer (Canada)	NOARC or NOARK

What Action Should Property Owners Take?

Property owners are advised to replace all Stab-lok® breakers and panels immediately with all-new equipment, even if they have previously functioned without incident.

Quick Tests Will Not Identify Defective Breakers. Toggling the ON-OFF switch does not test the ability of the breaker to function in overload or short-circuit conditions and cannot identify which units are functional and which are not. Field testing cannot determine which breakers are defective. This can be done only through live functional testing, which is costly and must be done by a qualified professional. In many cases, it is more cost effective to replace the entire panel.

Removal Recommended In All Cases. Most Stab-lok® circuit breakers, which are *supposed to function as safety devices*, are known to be defective. However, neither visual inspection or field testing can identify which breakers are functional or nonfunctional; thus, leaving them in place creates a latently hazardous condition because one cannot depend on them to function during a safety-critical situation. Therefore, *the only safe course of action is to replace all Stab-lok® circuit breakers, bus assemblies, and panels immediately with new equipment.*

CAUTION: *Only a qualified, licensed electrician should attempt to move or remove the circuit breakers, open the panel cover, or move other components inside the box.*

All-New Replacements Recommended. Though it is tempting to replace individual Stab-lok® breakers with "replacement" or "compatible" Stab-lok® breakers, this is *not advised*. Do not use "refurbished" or "replacement" Stab-lok® breakers; many of these are salvaged and not safe to use. Do not use "new old stock," which is the same as the product that needs to be replaced. Property owners will need to cover the replacement costs (typically $750 to $3000). This may include coordinating with local utility company to ensure suspension of service to the building during replacement. Property insurers that are focused on good risk management practices have recognized this hazard and will require that property owners replace the entire panel before an insurance policy can be issued or renewed.

The information in this *Risk Alert* was adapted from published, publicly-available sources. Readers are advised to consult a licensed professional electrician or engineer in matters relating to the topics described herein. For more information on FPE Stab-lok® circuit breakers, including a list of references for this *Risk Alert*, request Sequoia Risk Management Guide SRMG-021, *Federal Pacific Stab-lok® Circuit Breakers: What's the Risk?*