



## Inspectagator

Please Read This Article!!!

I suspect that I will upset a few realtors and investors with the following article. It considers a product that was around for about 30 years (mid 1950's to early

1980's) so it affects quite a few people, including my own home. The product is the Federal Pacific Electric (FPE) Stab-Lok electrical panel and breakers. The bottom line – FPE breakers have a record of failures to trip, actual test results and field reports of failures, and improper UL listing practices.

I have read stories of electricians who, upon removing the dead panels, have had breakers fall out of the box or fail to open a circuit when the handle was placed in the off position. I have personally talked to electricians who have arc welded metal and wires trying to identify circuits because the FPE breakers would not trip. Publicly available information is compelling to warrant this warning.

Remember, I am not intending to scare or offend anyone. I am simply relaying information I feel is vitally important to the real estate industry based on the research I have done and how it may affect us as landlords, real estate agents, investors, and home owners. AND...if I know this crowd, you may wish to keep this issue of the CFRI newsletter in your vehicle to N-E-G-O-T-I-A-T-E with! My primary J.O.B is to inform. Inform people of what they are getting themselves into. Some people don't care the roof needs to be replaced yesterday because someone in the family is a licensed roofer. Some people don't care if the AC is sub-standard because they negotiated \$3K for a new system. However, people still make big money decisions based on the information that I present to them and I do it as eloquently as I know how to.

Usually the first seller/seller's agent defense of FPE equipment I hear is that the panel has been there for the last 30 years and it's just fine, they have never had a problem with it, it was code back then, yada yada yada. Well yada know what? So was asbestos. Its age is the first problem. Over time, internal mechanical components can become corroded or distorted and may not be reliable. Electrical equipment doesn't get better or become more reliable with age (with any brand) and the fact remains that standards in manufacturing and "codes" were not as stringent 50, 40, 30, or 15 years ago. Consider this: as long as a circuit breaker sits uncalled for (an overload or short circuit) maybe 30, 40, 50 years, it may seem to "work" just fine. But if it cannot be relied upon to absolutely protect you, your family, or your

tenants; *it is a latent fire hazard*. There are at least four other design issues that are no longer allowed. The gutter space, wire bending space, spring mounted bus and breakers that are on when in the down position.

Engineer J. Aronstein parallels FPE panels to pennies under screw in fuses. Test after test I read about produces similar results of breakers that fail to trip or jam internally in the closed (current flowing) position. These are the basic, but not the only, safety defects with this product. We all rely on a breaker to break or open the flow of electricity in an overload or short circuit situation. If you have an FPE panel/breakers, they may not be reliable. Testing by the Consumer Product Safety Commission (CPSC), Underwriters Laboratories (UL) and even FPE themselves (and others) have documented that the product may not be dependable. Testing confirmed failures in two pole breakers (breakers for dryers, furnaces, etc), single pole breakers (small general lighting circuits) and GFCI breakers. Engineer Aronstein points out that most breakers will never be called upon to trip (interrupt the flow of current) and the home owner's perception is that the electrical system is fine. This same observation could also be made if there were no breakers, just a hardwired system. In the event of a malfunction, our safety depends on the reliable operation of that breaker device. It is even reported that UL "de-listed" virtually the entire line of FPE breakers. He says that unless we are willing to live with the risk, the FPE panels should be replaced entirely. If I can translate that into financial ease...\$500-\$1000! OUCH!

In 1981, FPE sent a letter to Towson University regarding a volunteer recall. They replaced over 200 breakers on campus. Wonder why? On June 13, 1998 they had a major failure that caused several thousand dollars worth of damage. "Upon testing prior to restart of the system we found that over half of the 18 breakers and switches in the panel would not pass. We are in the process of removing all of the FPE breakers in our buildings as quickly as we can."

There are compatible type (after market) breakers now made under the names "American" (no longer UL listed, wonder why?), "Federal Pioneer" (No recalls listed but in the manufacturer's own words "In some circumstances these breakers may not trip") "Challenger", "Federal Pacific Reliance Electric," and "Federal Pioneer Limited." I did not find any data that documented the performance of these brands; however, in some cases these products have been made outside the US border and thus may not comply with some standards. Are you still pondering this issue?

Some panels have a "Rule-of-Six" configuration where there is no main breaker. This means that there are no more than six switches or breakers to terminate all power to

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the house. This configuration is less expensive but may also provide even less protection. In a panel that does have a main disconnect, the main serves as a secondary back up breaker should one of the other breakers fail. If there is no main breaker this feature is eliminated. Since we already have breakers that are prone to failure, this type of configuration has an "unacceptably high probability" of having one or more circuits completely unprotected. The current flow would now be only limited by the transformer on the utility pole which can provide 1000 amps or more! My personal home has this very configuration. On the very day of this article's submission, I purchased a new panel and breakers. I will lead my mouth and reputation by example. Expensive, yeah, but to protect the three most important persons in my life it's a drop in the bucket. I purchased (with the guidance of my electrician) the box, breakers, SEC cable, and a GFCI breaker from Home Depot for less than \$200! I will also pay to send my own panel to Mr. Aronstein for independent testing. You can absolutely bet you'll see a follow up article on this thing that scares me more than a \$1 million dollar mortgage.

Mr. Aronstein cited an example of a close call. It was from a family who had replaced their FPE panel because of information like this they had read on the internet. After removing the panel and breakers, they found that the dryer circuit had jammed internally in the closed position (current flowing). If there had been a short circuit or overloading situation on that circuit, the results could have been deadly. Upon further testing two other breakers in this same panel failed during live tests. All this from a panel that looked fine from the front! Another design issue with some FPE boxes is how breakers fit onto the bus bars. Most plug in type breakers fit with their jaws parallel over the bus bar. FPE's are just the opposite in that the prongs fit that minimize metal contact. If breakers are loose fitting like many FPE ones are, lack of contact pressure and small contact area will combine to produce arcing and overheating. FPE bus bars have slots in the bus bars that accept different types of breakers. These slots are "E" and "F" slots. Sometimes people can force an E type into an F type and also have a loose connection.

Some people are familiar with the CPSC press release that said the Commission had insufficient data to accept or refute FPE's position and that they did not have enough money to continue testing or to continue paying for the attorneys in its legal battle with FPE. They figured it would cost several million to continue testing and gather all data when their yearly budget was all of \$34M. I'm not sure if Robin's Pre-Paid Legal would have helped them or not. Testing was terminated by CPSC in 1983, however I quote, "Commission testing confirmed that these breakers fail certain UL calibration test requirements." The Commission

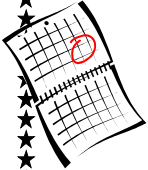
actually suggested that everybody keep an eye on your service panels/breakers. www.inspect-ny.com says "The Commission's admonition to avoid overloading circuits and to turn off and have examined devices which seem to be creating a problem is a poor substituted for reliable, automatic over current protection." At some point after 1982, UL "de-listed" most of the FPE protective devices stemming from the parent companies own admission that the UL listing had been secured by "deceptive means."

If your home inspector indicates that your FPE panel should be fully evaluated by an electrician, there is the possibility that the electrician can look and see nothing wrong. However, breakers burn out from the back to the front not front to back. So without removing each breaker for examination, you often cannot see if there has been a problem. Large main breakers have not been tested enough to prove or disprove their reliability. Without testing each individual breaker, one pole at a time under overload and short circuit scenarios, it is impossible to determine how your home's system will perform. Such testing would also cost way more than just replacing the box in the first place. It is entirely possible that some breakers will perform as intended, I don't deny. However, consider this from www.inspect-ny.com: "...in absence of an explicit statement from the manufacturer and/or the US CPSC indicating that newer stock equipment is defect free...these panels be replaced with newer equipment. ...if a fire or other hazard occurs with this device, neither the manufacturer nor the Commission will accept responsibility for losses that may ensue." This means that YOU get to pay for it. From now on, my reports will be harsher in disclosing the FPE breakers/box are of questionable operating reliability. Jeff and Debbie Gold of www.rentaman.org expressed a personal experience with me of flames shooting out of a panel because the breaker failed to trip! Very close to home. How can I possibly condone or whitewash the continued use of breakers that cannot be depended on to trip or break a current flow when a life or property may absolutely depend on it? From a guy that throws quarters around like manhole covers, I personally cut a check without blinking to get this thing out of my house. After I send this panel to Mr. Aronstein for testing, a full report will be provided for all CFRI members.

--By Jon Bolton

CFRI Business Member

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