Service Advisory SA011

PowlVac 3000 Amp Heat Sink Upgrade

May 15, 2010

The **PowlVac®** vacuum circuit breaker has earned an excellent reputation for reliability over the past 25 years. This notice is intended to help our customers maximize the operating life of the equipment.

PRODUCT: PowlVac® vacuum circuit breakers with nameplate ratings of 15kV, 3000 amps, 500MVA/25kA/750MVA/36kA/1000MVA/50kA. Excluded from the advisory are all 5kV, all 63kA, and all 5000 amp breaker ratings. Note: switchgear assemblies with 3750 amp or 4000 amp fan cooled equipment ratings utilize a breaker with a 3000 amp ambient rating.

CONDITION: Powell has identified environmental operating conditions from field reports in which partial discharge of PowlVac 15kV, 50kA, 3000 amp circuit breakers may be initiated in the region of the heat sinks connected to the upper disconnect stab assemblies and the insulating phase barriers.

CAUSE: Extensive laboratory testing attempting to simulate the reported occurrences of increased partial discharge activity have not provided corroborating or supportive results. However, we have gathered enough field data which indicate the presence of partial discharge in this location while the circuit breaker is subjected to certain combinations of environmental and operational conditions. While field data is often acquired in an uncontrolled manner, the field reports have in common two or more of the operating conditions listed below.

High humidity
Excessive amounts of external contaminates on the insulation
Fan cooled assemblies
Lack of surge suppression on the bus
The heat sink is incorrectly in contact with the barrier assembly
Extended maintenance intervals

Partial discharge, when initiated by these conditions, may continue when conditions return to normal and may cause damage to the insulation. Damage due to partial discharge occurs over long periods measured in weeks, months and years depending intensity. While the probability of failure is remote, these conditions if unchecked may lead to a damaging fault.

INSPECTION: The field inspection requirement is classified as a low priority and checks can be conducted during a normal maintenance interval. However, if several of the conditions listed above apply, a more immediate measure should be considered. While most of the breakers will likely not be affected, we recommend verification of all breakers with the identified rating.

Partial discharge is indicated by the presence of white shadowing on the insulating barrier in close proximity to the upper stab heat sink assembly. This shadowing may progress to darker and black tracks after extended periods.

CORRECTIVE ACTION: Powell has designed a replacement heat sink assembly with improved dielectric properties which can be easily installed. After the breaker is safely removed from service and placed in a clear work area, this part can be changed out in less than five minutes. Insulating barriers should be checked for partial discharge damage. In most cases, a routine maintenance cleaning with

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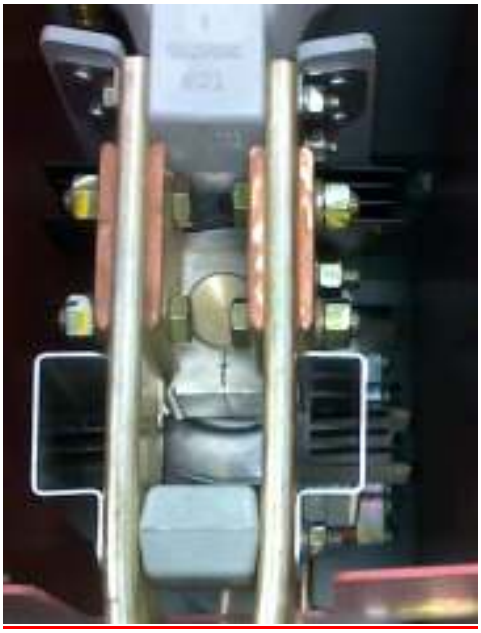
denatured alcohol will be the only action required. If the barriers are questionable, they should be replaced. Upon request, Powell will supply the replacement heat sink assembly at no cost for customer installation. All other components are considered maintenance items.

SAFETY: The breaker must be removed from service prior to maintenance. Follow all NFPA 70E safety recommendations before attempting to service the breaker. Verify that the breaker is open before attempting to disconnect from the stab assemblies. Only qualified personnel should attempt performing maintenance on any power circuit breaker. Do not reach into the breaker mechanism with the operating springs in the "charged" position or with the breaker in the closed position. The high mechanical forces required to operate the breaker can cause serious injury.

Photo of original U shaped heat sink with minimal, non critical signs of partial discharge.

Photo with replacement heat sink assembly



Please contact PSD for information or questions concerning this issue.

Sincerely,

Dennis R. Thonsgard

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GENERAL MANAGER - POWELL SERVICE DIVISION

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