Lesson Learned
Contractor Oversight

Primary Interest Groups
Transmission Owners
Generation Owners
Distribution Providers

Problem Statement
A Plant Operator did not recognize the risk/consequence of having a vendor perform work in a substation without a Plant-approved verification method in place for ensuring work quality.

Details
A Generation Facility experienced a trip due to an internal fault in a SF6 gas breaker. The breaker trip interrupted power to the auxiliary transformer that is the normal feed for the plant. The generation facility is equipped with a fast bus transfer scheme that isolates the auxiliary transformer and closes in a startup transformer. Upon closure of the startup transformer a 487/T1 B phase Startup transformer Differential Relay actuated. The 487/T1 relay inputs to a 286/T1 Lockout relay initiated de-energization of the Startup transformer, causing it to be isolated.

Investigation revealed that two splices on the Startup transformer’s CT were missing insulating sleeves. This created an alternate path for the CT secondary current, which impacted the differential protection scheme operation.

A previous maintenance outage inspection of the Startup Transformer junction boxes found a “green goo” coming from the wires within the boxes. Emergent work was declared to replace all four Startup Transformer CT penetration blocks. The utility brought a vendor in to replace the junction boxes per an aggressive schedule. During this effort, the vendor’s scope of work grew to include control cable replacement.

After the vendor left the site, two of the CT penetrations were to be leaking and the vendor had to be asked to return to the site to replace the two leaking CT penetrations. During this replacement two insulating sleeves that are necessary to prevent terminal-to-terminal contact were inadvertently not installed on the external connections, which led to the differential relay action that isolated the start-up transformer.
Corrective Actions
Plant personnel provided less than effective supervisory and management oversight of contractor work activities. Plant procedures are being revised ensure a quality work product is achieved.

Lesson Learned
The event highlights the need for vendor oversight policies to include a discussion with the vendor of performance standards and expectations for the work, human error reduction techniques, and verification of completed work.

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This Lesson Learned was prepared by the SPP Registered Entity that experienced the event. Company specific identifiers were removed to maintain confidentiality.