
Equipment Failures

-documenting and interpreting the facts-

The failure or misoperation of electrical equipment can have a significant effect on production and the revenues generated by a given facility. When the same or similar problem appears to be reoccurring periodically, it may be a system problem rather than one associated with a particular piece of equipment. Sometimes a more indepth analysis indicates that there are repetitive problems with other equipment as well. Repetitive problems could include any number of different events, but some of those are: scr failures, spurious fuse blowings, unexplained circuit breaker trips, transformer overheating when the load does not appear to be excessive, motor overheating, motor contactors dropping out, misoperation of electronic equipment, and equipment failures.

System conditions that may cause some of the above problems are: momentary low voltage, excessive voltage or current distortion, capacitor bank switching, switching of other equipment, lightning surges, and inadequate grounding.

To solve problems like those listed above, analysis capabilities and experience in solving similar problems are very beneficial. These capabilities can be obtained from a consultant who has experience in solving these types of problems. To determine the appropriate solution the first step is to define the details of the problem. The following guidelines can help to expedite this process:

1. The person who has been most directly involved in the problems knows a lot of information, but he may not always realize the importance of some of those facts. It is important to get as many details as are available.

2. Write down as much information as possible about a problem soon after it occurs. As time passes, the facts tend to change. Include such information as time of day, date, weather, and any other event which happened simultaneously, such as the opening or closing of a certain switch. When events occur in fractions of a second, it is not necessarily obvious what occurred first.
3. In piecing together the facts, what overcurrent devices operated or didn't operate can be very important. That should be noted at the time of the event.
4. If an experienced person is to be brought in to help in solving the problem, it is best to do that as soon after a problem has occurred as possible. If equipment damage has occurred, it is desirable for that person to inspect the damage prior to it being cleaned up and repaired. (Pictures of the damage can be invaluable.)
5. If the problem is repetitive and does not cause significant damage, field measurements may be appropriate. If the event causes severe damage every time it occurs, trying to record it again may not be desirable or practical.

Conclusion: When a problem occurs, there is usually a lot of information available to help in solving the problem. The key is to document that data and combine it with experience and analytical capabilities to solve the problem.

-The Editor

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