

The example investigation plans that are provided in Appendix F can aid either simple or detailed investigations. *Responsibilities of the Team Leader*, included in the SOURCE™ Investigator's Toolkit in Appendix F, lists specific tasks the team leader should address. Other forms are provided that can assist with investigation management, such as an *Investigator's Log*, *Open Issues Log*, *List of Contacts*, and meeting forms.

## 2.9 Assembling the Team

The composition of the team depends primarily upon the characteristics of the incident (recall the classification scheme discussed in Subsection 2.7). Teams can range from a single investigator to a large, multidisciplinary group of facility, corporate, and/or outside personnel. The largest workable team usually has a core group of about eight. However, two to six is the optimum number. Even the smallest investigation should have a two-person investigation team, with the two people coming from different parts of the organization. This approach helps the team look at the incident from multiple perspectives, resulting in a more thorough analysis and higher quality recommendations. Other people may assist the team, but they usually have very specific tasks assigned to them and, therefore, are not considered team members.

A typical team consists of operations personnel, maintenance personnel, system engineers, safety/reliability/quality department representatives, and an individual with investigation expertise. Many others can help with the investigation, even if they are not on the team. Examples include vendor representatives, fire investigators, chemists, company attorneys, instrument designers, reliability engineers/specialists, and technicians.

In general, individuals who have one or more of the following characteristics should NOT be on the investigation team:

- *People too close to the incident.* They often cannot see what occurred during the incident because they were too involved to be objective. It can also be uncomfortable discussing an incident in which they were involved.
- *People with insufficient time to participate in the investigation.* The investigators need to be able to devote adequate time to the investigation in order to obtain acceptable results.
- *People who already "know" the answer.* If someone believes that he or she already "knows" the answer, the investigation becomes just a way to confirm what he or she already believes instead of an investigation that explores all the possibilities. People who already "know" the answer don't question their assumptions.
- *People too high up in the management chain.* Individuals too high up in the management chain tend to dominate the investigation and intimidate the individuals involved. This can lead to limited data being uncovered during the analysis, which is harmful to the investigation because thorough data is needed in order to understand the underlying causes and develop effective recommendations.

Exceptions may need to be made to these rules as a matter of practicality. If there are a limited number of facility personnel with the skills and knowledge needed to perform the investigation, it may be necessary to assign an individual to the team who possesses one or more of these undesirable characteristics.

In some cases, the individuals involved in the incident may request to be on the team. This may help them feel that they are contributing to solving the problems they helped create. As noted, these are general guidelines and exceptions can be made based on the specifics of the situation. However, in general, such individuals should not be part of the team.

## Section 2: Initiating Investigations

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### 2.10 Briefing the Team

Once the team is assembled, the team leader should use the following guidelines to unify the team functions. Brief the team so that everyone knows:

- The purpose and goals of the SOURCE™ RCA process and the specific investigation at hand
- What is going to happen during team meetings and the investigation
- That all team members should provide input and opinions (they would not have been asked to be on the team if their input was not valued)
- The following rules (addressed in Section 3) for performing interviews: (1) be nice and (2) be quiet when others are talking
- That all team members need to be creative in identifying potential failure mechanisms, skeptical of the data they collect, and rigorous and logical in analyzing data

The ideal team room has plenty of wall space to develop causal factor charts, timelines, and cause and effect trees (covered in Section 4), enough table space to allow team members to spread out the data they collect, sufficient room to work on wall charts and move around, a door that can be closed and locked (to keep out the curious), and relatively quick access to where the incident occurred and where relevant personnel are located.

The team may also need separate rooms or areas to perform interviews. The rooms should be near where the incident occurred and where the personnel are located, have minimal distractions, and be familiar to the interviewees. The room should also contain at least three chairs and a flipchart or whiteboard to draw on during the interviews.

### 2.11 Restart Criteria

In some instances, restart criteria may need to be established before the equipment or system can be restarted. For example, if a pump malfunctions and is damaged, criteria should be established for its return to operation so it does not fail again. In most cases, it is not practical to wait for the root causes of the incident to be identified before the equipment is released for restart. However, at least one of the causal factors needs to be identified and addressed before the pump is restarted. By identifying and correcting at least one of the causal factors, there is some assurance that the pump will operate without failing or that the consequences of its failure will be reduced while the underlying causes of the failure are identified and corrected. As described in Section 6, recommendations may be short term, medium term, or long term in nature. Restart criteria usually involve implementation of short-term recommendations that act as a “quick fix” to get the process going again while medium- or long-term recommendations are being developed.

Restart criteria may also apply to personnel safety incidents. For example, if someone is injured because of an electrical system malfunction, short-term recommendations will need to be implemented to prevent further injuries to personnel. These short-term recommendations may consist of repair of the equipment (e.g., correcting a short-to-ground condition) or involve a lockout of the equipment until the underlying causes of the problem can be identified. Medium- and long-term recommendations will need to be implemented so that malfunctions of other electrical equipment are prevented or their consequences are minimized.

Restart criteria have another purpose. In addition to avoiding or minimizing the consequences of future failures, restart criteria are also used to determine whether the appropriate data are collected before the equipment is released. For example, photographs of scratches on the surface of a failed shaft may be needed to understand the failure. Restart criteria may involve obtaining these photos before returning the component to service. Another example would be collecting oil samples from various portions of a diesel engine before flushing it.