

Anticipating Troubles: Recognizing and Responding to Abnormal Operating Conditions

Seneca said of himself, “I am not a wise man and I never will be.” One of the Stoic philosophers, Seneca had his share of triumphs and troubles. He achieved wealth, then was forced into exile, returned and taught the emperor Nero, and finally was ordered to commit suicide by his pupil. While he might not have known the term “abnormal operating conditions,” he said something that we can apply to Control Room Management (CRM).

The person who anticipated the coming of troubles takes away their power when they arrive.

The CRM regulations place an emphasis on equipping Controllers in “recognizing and responding to abnormal operating conditions.” Abnormal operating conditions (AOCs) may occur separately, simultaneously, or in sequence. They may occur at any time and when they are least anticipated. **What can be done to anticipate AOCs?**

First, establish a list of those conditions that are likely to occur simultaneously or in sequence. Inspection question H1-1 states that “establishing a list would be necessary to identify training for this requirement.” A few years ago, Ali Gibson and I reviewed the inspection questions with a manager. When we got to this one, he said he did not like making lists and felt no need to have a list. I thought that was a strange and unwise response. **Does your CRM Plan list AOCs so that training can be provided?**

Second, develop a set of abnormal operating procedures. Both 49 CFR § 192.605 (c) and 49 CFR § 195.402 (d) require a procedural manual for abnormal operations. That is a stated requirement for hazardous liquids and gas transmission pipelines. The best practice would be to have abnormal operating procedures that specify what actions controllers shall take during abnormal operations. We still see companies whose Operations and Maintenance manuals state that procedures are required for abnormal operations without actually having procedures. **Does your control center have abnormal operating procedures that are used as a component of controller training?**

Third, use a variety of training methods for recognizing and responding to AOCs. The sources of the training can come from actual occurrences of AOCs and the lessons learned from those occurrences. A review of alarm logs may reveal conditions that can be included in scenarios. Some companies invest in simulators, others use tabletop drills. A few control rooms perform “fluid withdrawal tests” without prior notification to controllers. The withdrawal of actual fluid triggers a leak detection alarm, which the controller should recognize on a timely basis and take appropriate action. This practice is aligned with the guidance in CSA Z662 Annex E “Recommended Practice for Liquid Hydrocarbon Pipeline Leak Detection.” **Does your training program use a variety of training methods?**

Anticipating the comings of AOCs and troubles they may cause requires careful planning and ongoing effort. Seneca would think it was worthwhile because a rigorous training program would take away their power. Be wise, rather than never being wise.