

SCADA CRM Effectiveness

During our workload and human factors assessments, we evaluate SCADA displays. I asked a SCADA person who builds screens if he was familiar with API Recommended Practice 1165 or any other guidance documents related to SCADA displays or Human Machine Interfaces, particularly because the company is in the midst of a SCADA system replacement. This “replacement” triggers the need for compliance with API RP 1165, and our evaluation led me to ask that basic question. He was not familiar with API RP 1165; are you?

The SCADA related section of the Control Room Management (CRM) regulations include these elements:

- Implement API RP 1165 whenever a SCADA system is added, expanded, or replaced...
- Conduct point-to-point verification between SCADA displays and field equipment when field equipment is added or moved and when other changes that affect pipeline safety are made...
- Test and verify an internal communication plan to provide adequate means for manual operation of the pipeline safely...
- Test any backup SCADA systems at least once each calendar year...

Something is effective if it accomplishes its purpose, if it produces a desired result. That is different from efficiency. Peter Drucker expressed the differences this way: *effectiveness is doing the right things and efficiency is doing things right*. The right things are in the bulleted points above. If you are going to be effective in those areas, a good beginning point is to understand why those things are important and perhaps that will lead your company to avoid endless, futile discussions and complaints about the difficulties of doing the right things related to displays, verifications, and tests.

In the case of the SCADA related CRM requirements, effectiveness can be minimally measured by compliance with the regulations, FAQs, and inspection guidance. I know that some companies have struggled and perhaps one reason is that the goal was efficiency, which is doing things with the least amount of time, cost, and effort.

Use the information below as a starting point in developing measures of SCADA CRM effectiveness:

- Does everyone who has a role and responsibility in SCADA processes have clearly defined and written responsibilities and do they know and fulfill those responsibilities?
- Do Control Center and SCADA personnel understand and apply the principles of human factors engineering, HMI design, and other guidance that affect the use of SCADA displays?
- Are the SCADA displays, at a minimum, compliant with API RP 1165 and does documentation exist that proves it is compliant?
- Do the Controllers believe the SCADA displays are designed, implemented, and maintained so that they have the necessary information to control and monitor the system, during all modes of operations?
- Are point-to-point verifications conducted between SCADA displays the Controller uses and field equipment that has been added or moved or whenever any change that affects pipeline safety is made and not just between devices that may be at any locations between the SCADA displays and field equipment?
- Does complete and timely documentation exist for point-to-point verifications that have been conducted since 2011?
- Does a comprehensive procedure exist for an internal communication plan in the events of partial loss or total loss of communications that provides guidance to Controllers, managers, SCADA/IT personnel, and field personnel?
- Are tests of that comprehensive procedure conducted that involve key stakeholders and that includes a continuous improvement component or lessons learned session?
- Does a comprehensive procedure exist for testing of backup SCADA systems and are tests conducted with key stakeholders and the test includes a continuous improvement component?

Do the Right Things Effectively!