

Pipeline SCADA Displays

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Pipeline SCADA Displays

1 Scope

This recommended practice (RP) focuses on the design and implementation of displays used for the display, monitoring, and control of information on pipeline supervisory control and data acquisition (SCADA) systems. The primary purpose is to promote the success of the controller to safely operate pipeline systems and to document industry practices that provide guidance to a pipeline company or operator who wants to select a new SCADA system, or update or expand an existing SCADA system, and for guidance throughout the SCADA system display lifecycle. The pipeline industry and stakeholders have determined that well-designed displays can contribute to safe operations and prevent or mitigate pipeline incidents. Using established human factors considerations in display design can promote the safety performance of a pipeline operator.

This RP assists pipeline companies and SCADA system developers in identifying items that are considered best practices when developing human-machine interfaces (HMIs). Design elements that are discussed include, but are not limited to, hardware, navigation, colors, fonts, symbols, data entry, and control/selection techniques.

A secondary purpose is to provide guidance to SCADA display designers and developers to use industry experience to promote safety, efficiency, and reliability during the display lifecycle.

It is recognized that each operator has unique philosophies and SCADA systems; therefore, not all elements of this RP may be applicable.

For example:

- some pipeline control centers are a combination of several different SCADA systems;
- some of these SCADA systems may not have the developer tools necessary to implement the RPs;
- some operators may have existing display techniques that utilize unique operating philosophies.

This RP is not all-inclusive. It is intended to cover best practices and provide examples for display techniques only, not dictate operational control philosophy or overall SCADA system functionality. Examples included in this RP are not prescriptive and are provided to illustrate representative practices.

This RP complements but does not replace other procedures and effective display techniques or industry standards that are used for software development and implementation. Regulatory and individual company standards are not addressed in this publication.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Recommended Practice 1168, *Pipeline Control Room Management*, Second Edition, 2015

Endsley, M.R. and Jones, D.G. (2016). *Designing for Situation Awareness: An Approach to User-Centered Design*, Second Edition. Boca Raton, FL: CRC Press.

McCormick, E.J. and Sanders, M.S. (1993). *Human Factors in Engineering and Design*. Seventh Edition. New York; London; McGraw-Hill

ISO 11604-4 1, *Ergonomic design of control centres—Part 4: Layout and dimensions of workstations*, 2019

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