

Control Room Management

Definitions and Diagrams

Definitions

- Positive Definitions
- Defining what is, rather than what isn't
- Impossible to list all operations and configurations that are not covered by the regulations
- Minimize the use of “not covered” examples

Pipeline Facility

established prior to CRM Regulations

- Facility ... a collective term
- 192 : new and existing pipeline, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.
- 195 : new and existing pipe, rights-of-way, and any equipment, facility, or building used in the transportation of hazardous liquids or carbon dioxide

SCADA

Supervisory Control and Data Acquisition

- Computer-based system or systems
- AKA, Distributed Control System or similar
- Collects and displays information about a pipeline facility
- Used by a Controller
- May have the ability to send commands back to the pipeline facility

SCADA System

- Whenever a SCADA system utilized by that control room is added, expanded, or replaced...
- Added, expanded or replaced refers to the actual SCADA System, not the pipeline facilities portrayed on the SCADA System
- Replacing components in kind (repairs)
- Upgrades (sustaining/enhancing performance)
- Expansion or Replacement Projects

Control Room

- An operations center
- Staffed by personnel
- Responsible for remotely monitoring and controlling a pipeline facility

Controller

- Via a SCADA System
- Remotely Monitors and Controls
- Safety-related Operations
- Operational Authority and Accountability

Controllers must be qualified

Operational Authority and Accountability

- Monitors through SCADA
- Controls directly, through SCADA
- Controls indirectly, by prompting others to action

Safety-related Operations

- Generally characterized as operational and other factors that:
 - Are necessary to maintain pipeline integrity
 - Could lead to abnormal and emergency situations

Remote

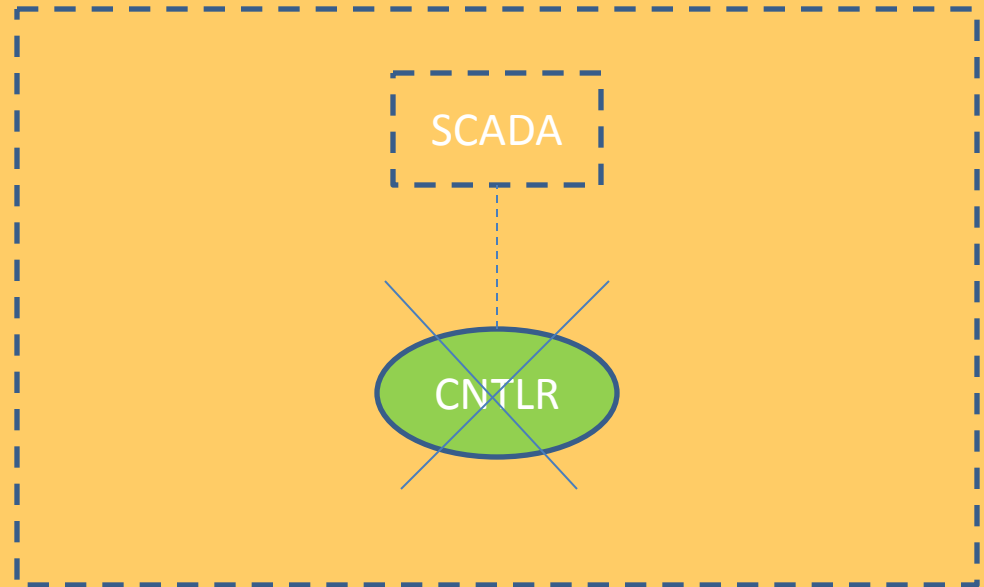
- Pertains to the person (controller) who has operational authority and accountability
- Beyond the fence lines of individual stations
- Pipelines crossing through the public domain

Control Room Supervisor

- Administrative Supervisor
 - Not trained or qualified as a Controller
 - Instruct Controllers on “what to accomplish”
- Qualified Supervisor
 - Trained and qualified as a Controller
 - Instruct Controllers on “how to”
 - Fill in during breaks , lunch and entire shifts
 - May only be qualified on certain consoles/desks
- Fatigue Management

CRM Diagrams -1

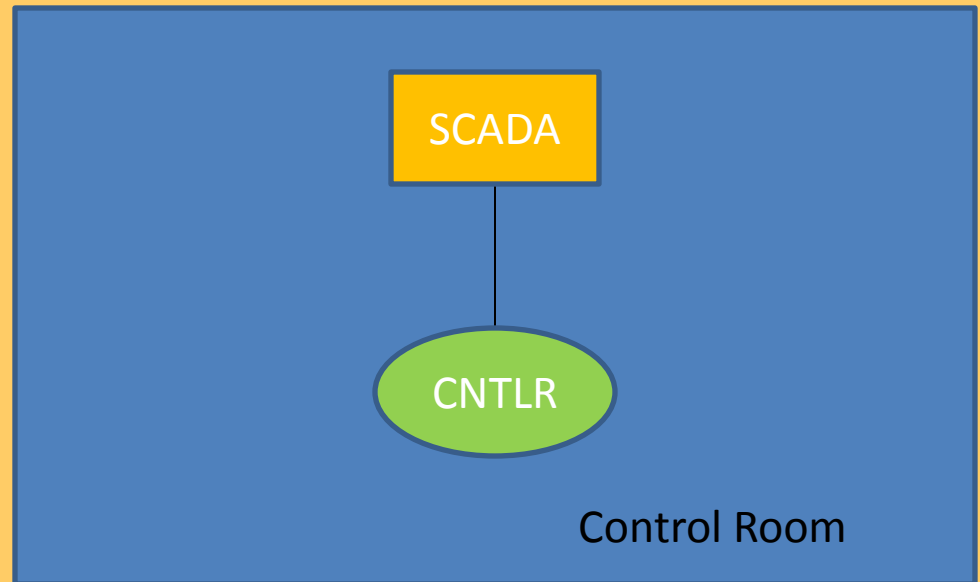
- No SCADA
- No computerized type display with pipeline data
- Therefore, no Controller



Pipeline System A

CRM Diagrams - 2

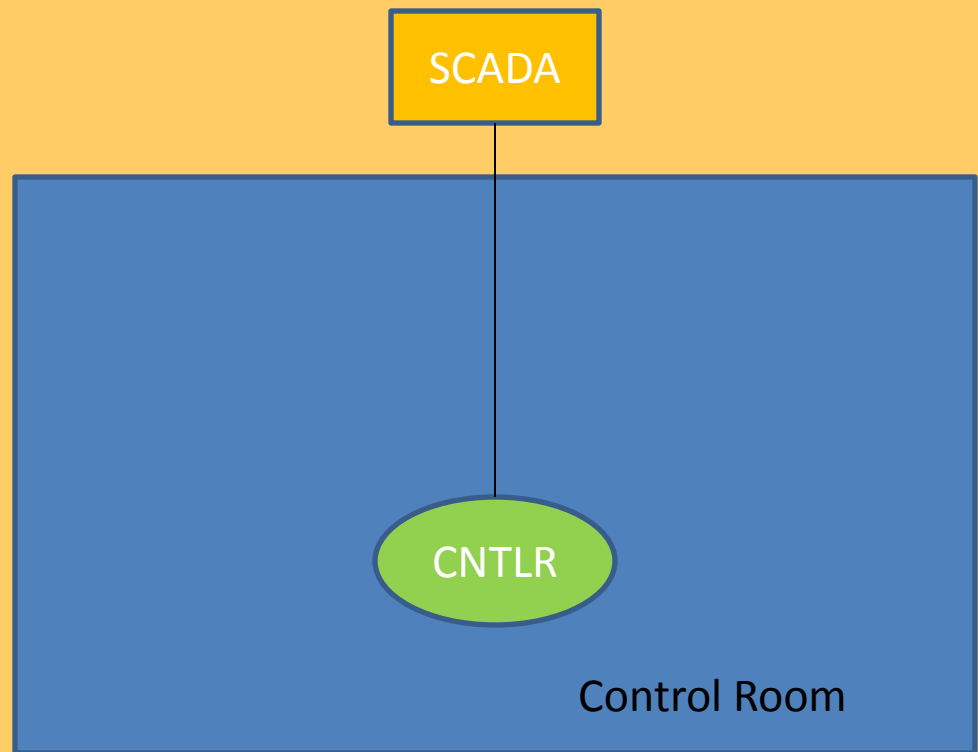
- Location is staffed by one or more individuals using SCADA, with a responsibility for Remote Monitor and Control
- Then it is a operations center and a control room
- With controller/s



Pipeline System A

CRM Diagrams - 3

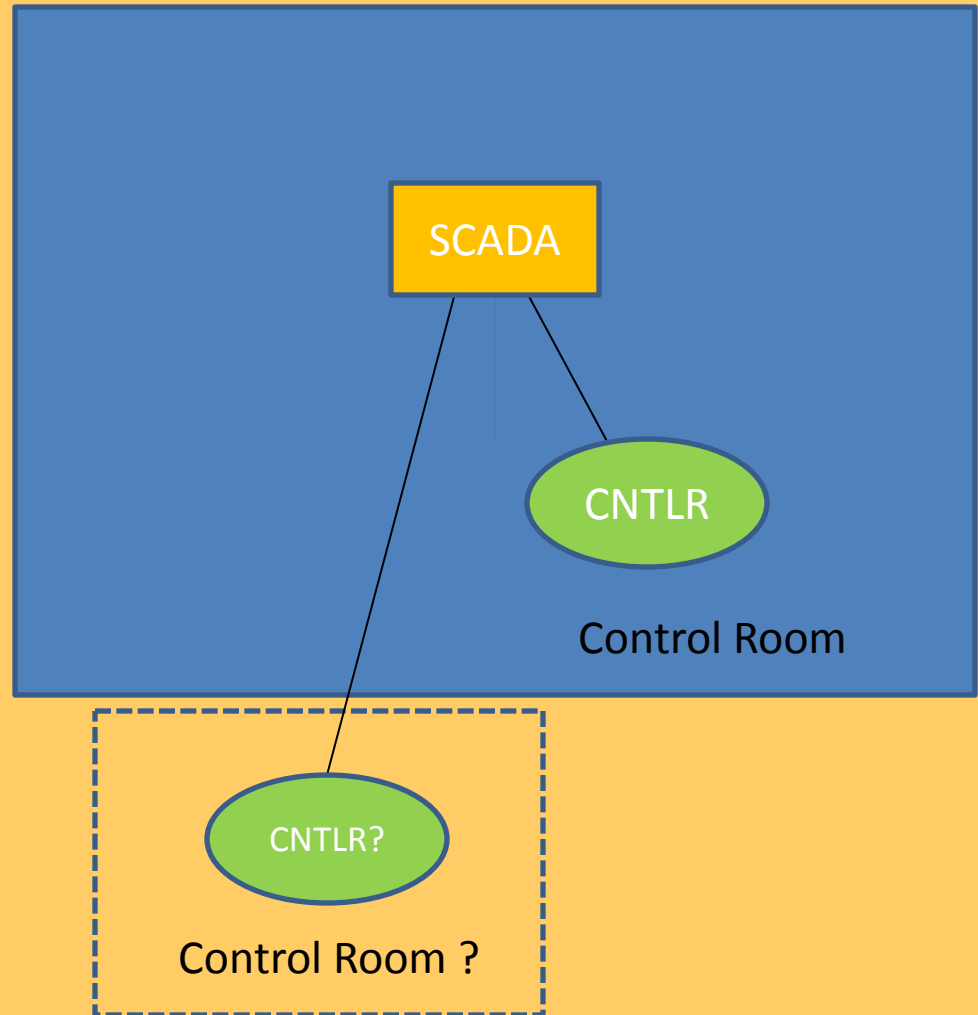
- Location of SCADA system is not determinative
- Control room does not cease to be covered if SCADA hardware is off-site
- Or if control room switches to off-site back-up SCADA system



Pipeline System A

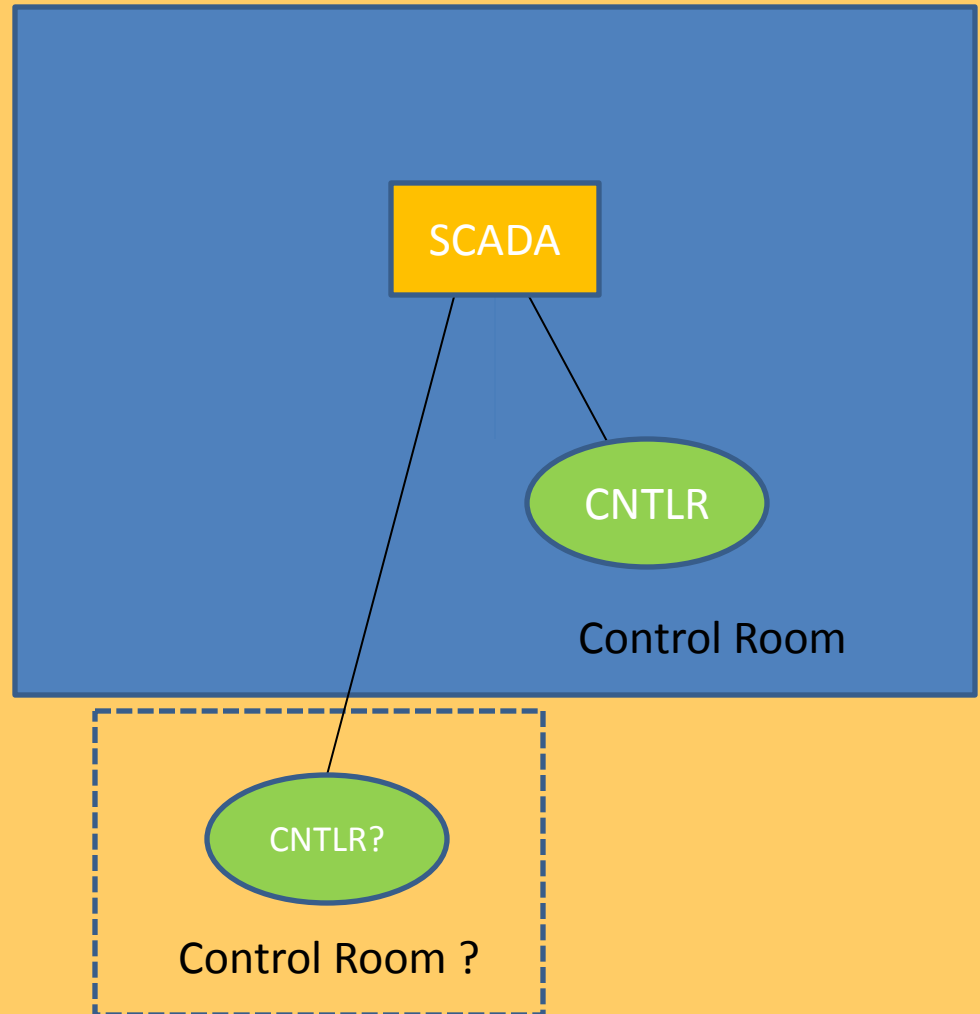
CRM Diagrams - 4

- Remote person could be in a vehicle with laptop, or in a compressor/pump station
- Remote person could be back-up person for main controller, or have regular duty responsibility for portions of the pipeline, or for portions of time



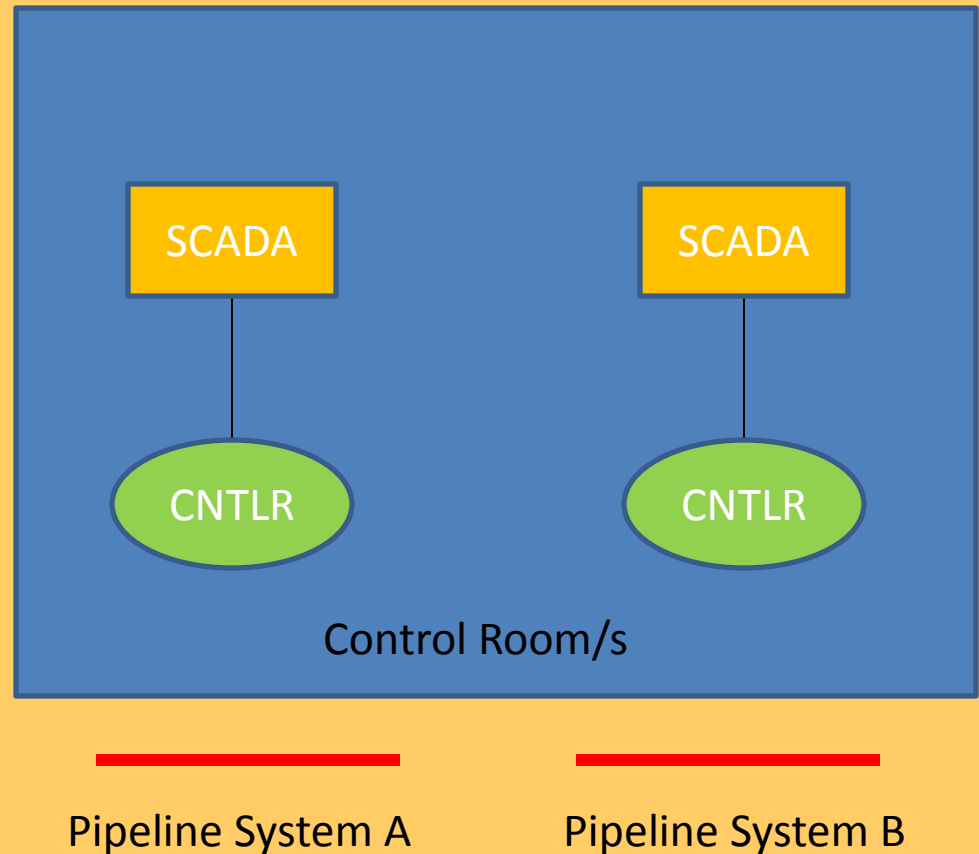
CRM Diagrams - 5

- Dependent on assigned duties, the remote person could meet the definition of a controller
- Controllers are covered regardless of “where” they function



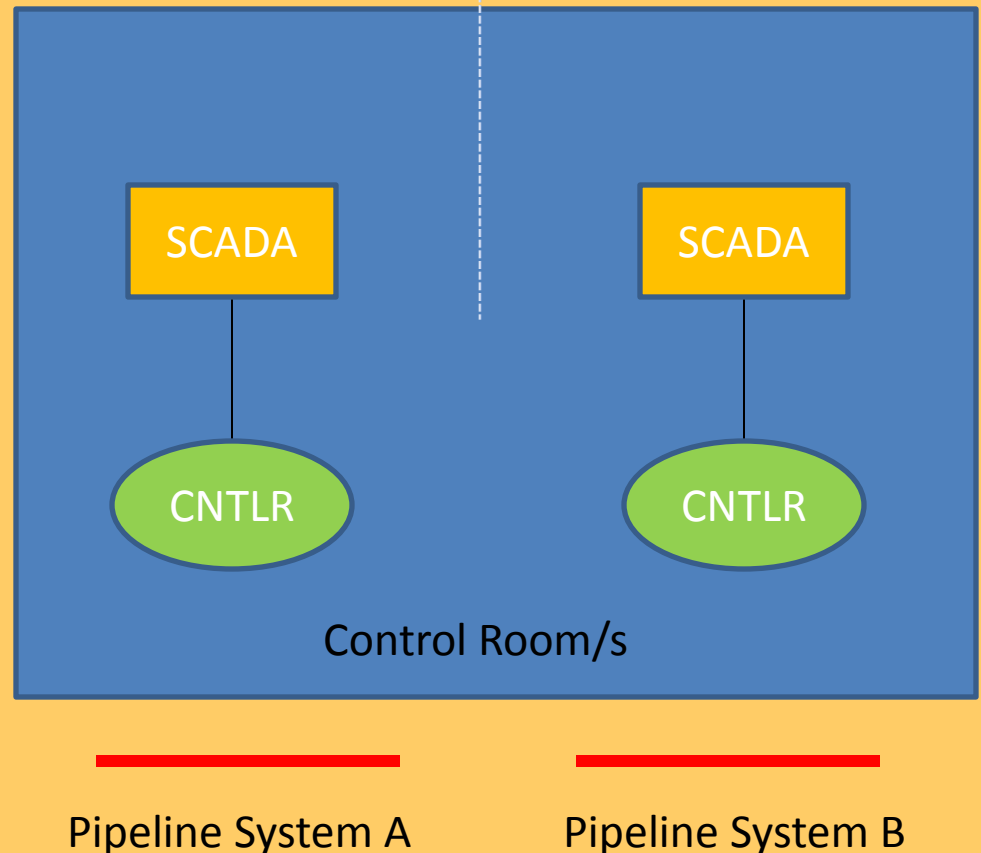
CRM Diagrams - 6

- Part 192 exceptions depend on combined number of services and any compression RM&C from any one control room, regardless of number of controllers and SCADA systems
- E.g., If System A is 100K services and System B is 200K services, the control room does not meet one of the exceptions to the rule



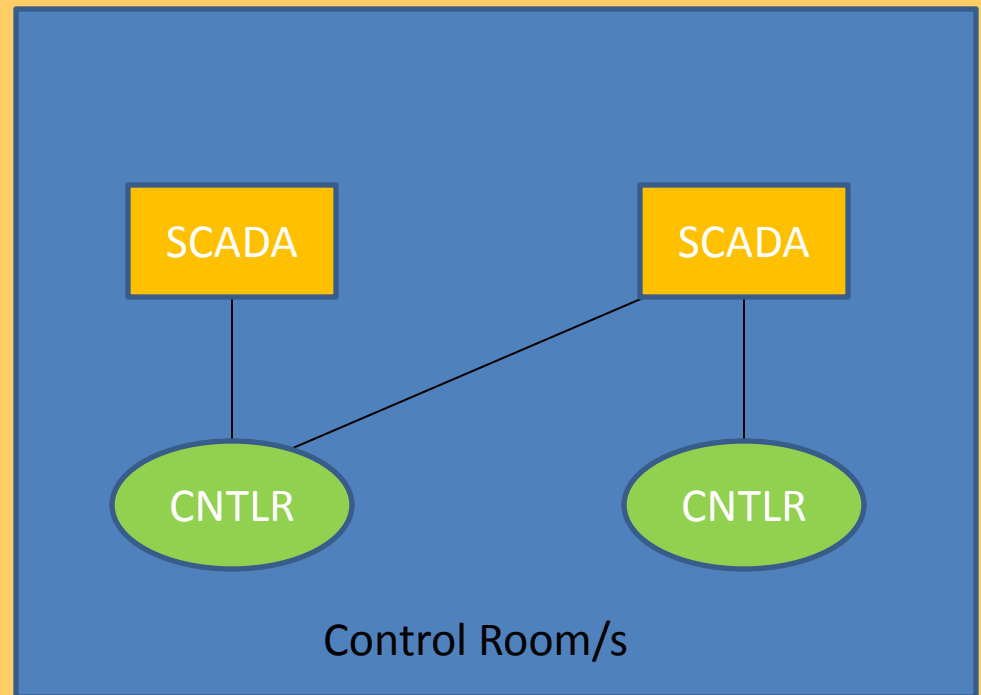
CRM Diagrams - 7

- Co-located controllers are considered to be in one control room, even if separated by a physical barrier
- The two operations can be maintained independently



CRM Diagrams - 8

- If not operated independently then consistency and training can be problematic
- Integrating a new replacement SCADA System

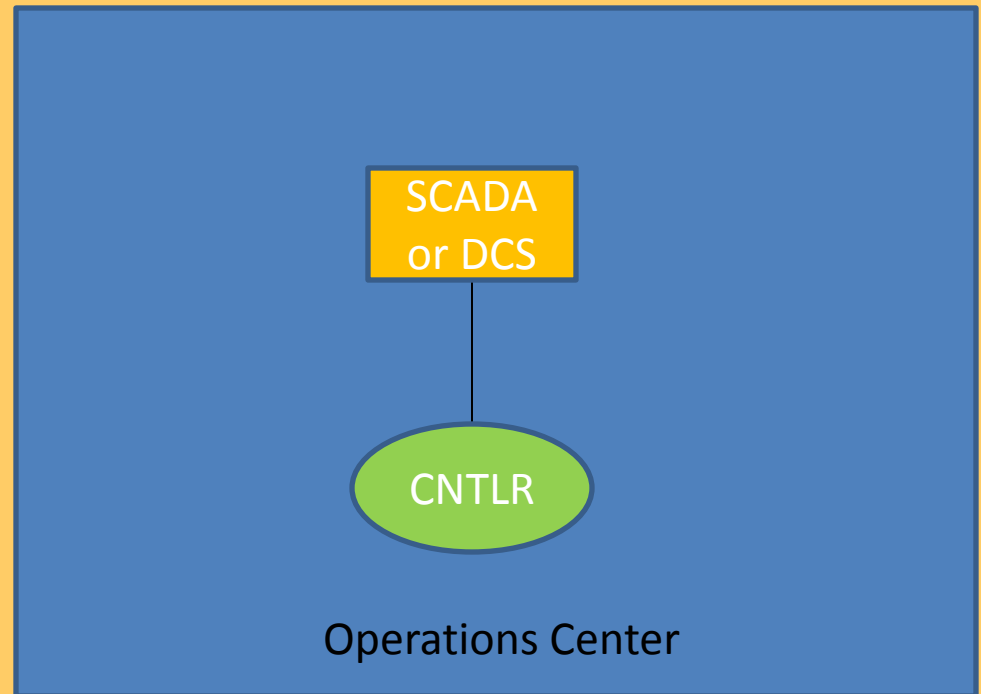


Pipeline System A

Pipeline System B

CRM Diagrams - 9

- Controller could be using the same or multiple screens or SCADA/DCS systems
- Compliance is required with regard to regulated assets, but not required for unregulated assets
- Only regulated pipeline assets are governed by the rule, therefore only regulated assets counted for purposes of any Part 192 exceptions

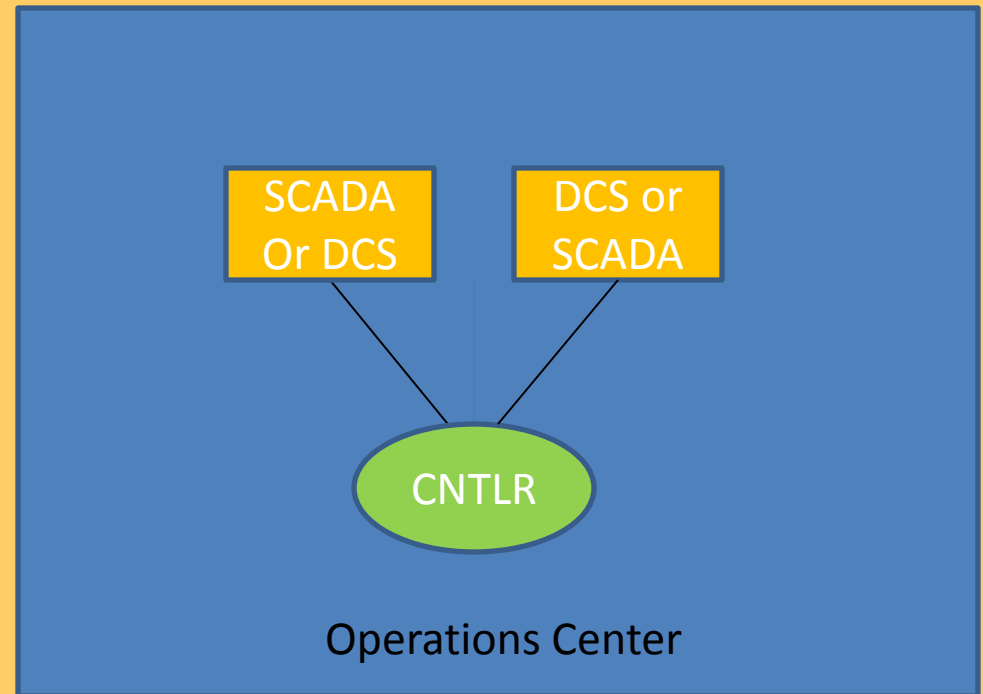


Unregulated
Pipeline Assets,
Refinery, or
Chemical Plant

Regulated
Pipeline Assets

CRM Diagrams - 10

- Any inconsistencies between regulated and unregulated should be minimized
- Alarm Mgt on the regulated assets may be impacted by alarms (activities) on unregulated assets.



Unregulated
Pipeline Assets,
Refinery, or
Chemical Plant

Regulated
Pipeline Assets