U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

Control Rooms & Controllers

May Not Be Just What You Think

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First:
Is There Jurisdictional Pipeline Facilities

- If an asset was not jurisdictional before CRM in 2010, it is not jurisdictional after CRM unless……..
  - **CHANGES HAVE OCCURRED**

Second:

- Does Scada exist?
  - A computer-based system or systems used by a controller in a control room that collects and displays information about a pipeline facility and may have the ability to send commands back to the pipeline facility.
  - Other similar systems

SCADA Definition Breakdown

- A computer-based system or systems
- used by a controller
- in a control room
- that collects and displays information about a pipeline facility
- and may have the ability to send commands back to the pipeline facility

Third:

- Do Controllers exist?
  - A qualified individual who remotely monitors and controls the safety-related operations of a pipeline facility via a SCADA system from a control room, and who has operational authority and accountability for the remote operational functions of the pipeline facility.

Controller Definition Breakdown

- A qualified individual
- who remotely monitors and controls
- the safety-related operations of a pipeline facility
- via a SCADA system
- from a control room, and
- who has operational authority and accountability
- for the remote operational functions of the pipeline facility.

Fourth: Definition of Control FAQ A.07

- A person that has responsibility to monitor a SCADA system and contacts others to initiate corrective actions is considered a controller.
- Also, a person that has responsibility to monitor a SCADA system and personally initiates corrective action via the SCADA system is also a controller.

Circular Definitions

Control Room

SCADA **Controller**

Fifth: Control Room Definition

- An operations center staffed by personnel charged with the responsibility for remotely monitoring and controlling a pipeline facility.
  - CRM inspections are based on Control Rooms
  - A Control Room may be..
    - Secure Room at Company Headquarters
    - Open Office Cubicle
    - Manager's Office
    - Compressor/Pump Station Control Building
    - Cab of Pick-Up Truck
    - Kitchen in a Private Residence, etc

Sixth: Responsibility

- Key Takeaway:
  - Does someone else have the responsibility for remotely monitoring and controlling this same specific pipeline facility within the same company?

Controllers and Scada

- If there is no SCADA System, then no one can meet the definition of a Controller
- Companies are NOT required to have a SCADA system
- Companies are NOT required to have controllers

Who is not a CONTROLLER?
FAQ A.08/A.09/A.10

- A.08 If a controller directs a technician in the field to manipulate a valve, the technician is not a controller.
- A.09 An individual who does not use a computer type interface with a keyboard/mouse, and display screen (or touch-controlled screen) is not considered to be a controller.
- A.10 Persons that monitor a pipeline status indication for non-operational purposes, such as business or maintenance personnel, would not normally be considered controllers.

Seventh: Does the Control Room Meet An Exclusion

192.631(a)(1) Practical Translation of Exclusions

"... where an operator's activities are limited to either or both of ..."

If the operator's activities meet either or both of these exceptions

- (i) Distribution with less than 250,000 services
- (ii) Transmission without a compressor station

Then the operator must only:

A – Determine applicability for the regulated assets

D - Fatigue management

I - Compliance validation

J - Compliance and deviations

192.631(a)(1)

- General
- (1) This section applies to each operator of a pipeline facility with a controller working in a control room who monitors and controls all or part of a pipeline facility through a SCADA system.
- Each operator must have and follow written control room management procedures that implement the requirements of this section, except that for each control room where an operator's activities are limited to either or both of:
  - (i) Distribution with less than 250,000 services, or
  - (ii) Transmission without a compressor station, the operator must have and follow written procedures that implement only paragraphs (d) (regarding fatigue), (i) (regarding compliance validation), and (j) (regarding compliance and deviations) of this section.

What Defines A Service

- Services are related to local distribution companies' 7100 type Annual Reports
- FAQ A.22 "Services" means the number of services as reported on the operator's annual report, submitted to PHMSA in accordance with 49 CFR 191.11.

Why 250,000 Services

- Number of Services was used as an index to risk.
- As an LDC grows its number of services, the control room becomes larger and more sophisticated.
- Control Room growth drives the adoption of more complex technology and work processes.
- This creates more “moving parts”, and a proportionately higher opportunity for miscues.

Regarding FAQs

- If a different course of action is taken by a pipeline operator, the operator must be able to demonstrate that their conduct is in accordance with the regulations.
- REMEMBER:
  - Written regulatory interpretations regarding specific situations may also be obtained from PHMSA in accordance with 49 CFR 190.11.

Paragraph A - FAQs

- A.03 If the owner of a pipeline contracts for the operation of the pipeline by another party, who is the responsible party for compliance with the CRM rule?

  The CRM regulations apply to all “operators” of the pipeline. The term operator is defined in 49 CFR 192.3 and 195.2.

- A.04 If controllers are located in a control room that monitors and controls an intrastate pipeline, but the control room is located in a different state than the actual pipeline, do the CRM regulations apply?

  Yes. The state or location of the control room operating regulated pipeline facilities does not determine the applicability of the CRM regulation.

Paragraph A - FAQs

- A.05 How does the term “pipeline facility,” as used in the definitions of Control Room and Controller, relate to other terms such as “pipeline system” that were not used in those definitions?
  - Since both 49 CFR 192.3 and 195.2 define “pipeline facility,” PHMSA found it was better to use the same terminology in both regulations.
  - “Pipeline facility” is defined broadly and includes line pipe, pipelines, pipeline systems, valves, rights-of-way, buildings, and any other equipment used in the transportation of gas and hazardous liquids.
  - Part 192 does not define “pipeline system.”

Paragraph A - FAQs

- A.06 Does the CRM rule apply to non-line pipe facilities such as breakout tanks, pumps or compressors?
  - Pipeline facility is defined in 49 CFR 192.3 and 195.2 and means any equipment used in the transportation of gas or hazardous liquids.
  - The CRM regulations apply to control rooms and controllers that remotely monitor and control pipeline facilities, including but not limited to, breakout tanks, pumps, compressors or other equipment along the pipeline.

Paragraph A - FAQs

- A.07 If a person in a control room monitors a Supervisory Control and Data Acquisition (SCADA) system and directs a technician in the field to manipulate a valve, is that person in the control room considered to be a controller?
  - Yes, a person that has responsibility to monitor a SCADA system and contacts others to initiate corrective actions is considered a controller.
  - Also, a person that has responsibility to monitor a SCADA system and personally initiates corrective action via the SCADA system is also a controller.

Paragraph A - FAQs

- A.08 If a controller directs a technician in the field to manipulate a valve, or take other action that does not involve use of, or access to, the SCADA system, is the technician in the field considered to be a controller?

  No, in this scenario the technician is not a controller.

Paragraph A - FAQs

- A.09 If an individual does not use a computer and display screen, but only monitors several discrete alarm indicator lights from a remote location and initiates action when an alarm (light) occurs, is that person a controller?

  No, an individual who does not use a computer type interface with a keyboard/mouse, and display screen (or touch-controlled screen) is not considered to be a controller.

  Please note: A touch controlled screen could be a phone

- A.10 If a person monitors a pipeline status indication for non-operational purposes, and does not have assigned responsibility to initiate corrective action, is this person a controller?

  No. Persons that monitor a pipeline status indication for non-operational purposes, such as business or maintenance personnel, would not normally be considered controllers.

Paragraph A - FAQs

- A.11 If a local distribution company (LDC) has a short transmission line with a small compressor that is rarely used but operated from the same control room as the distribution system, does it meet the exception in 49 CFR 192.631(a)(1)(ii)?

  There is no "minimum time of operation" criterion or a "minimum compressor size" criterion associated with the exception in 49 CFR 192.631(a)(1)(ii). Therefore, the full CRM rule would apply to this LDC since the pipeline is controlled by a controller from a control room that meets the requirements of the CRM rule.

- A.12 Does the CRM rule apply to a pipeline that has no SCADA system or control room?

  No.

Paragraph A - FAQs

- A.13 How does the CRM rule apply to control rooms for gathering lines?
  - For gathering lines monitored and controlled by a controller in a control room with a SCADA system, the CRM rule applies to the regulated gathering lines as provided in the scope of Parts 192 and Part 195.
  - The CRM rule does not apply to unregulated gas or hazardous liquid gathering lines.
    - As another example, the CRM rule applies to regulated “Type A” gas gathering lines (see § 192.9(c)), which may be treated the same as transmission lines for purposes of § 192.631(a)(1)(ii), but the rule does not apply to regulated “Type B” gas gathering lines (see § 192.9(d)).

Gathering Types A & B

Type A Gathering would be considered “transmission” pipe and therefore the operator would be in, because Type A must comply with all of 192 except 192.150 and Subpart O.

Type B Gathering is also considered “transmission” pipe but only required to comply with192.614, 192.616, 192.619, and 192.707, not including 192.631.

The regulation states that the endpoint of gathering is as follows:
(4) The endpoint of gathering, under section 2.2(a)(1)(d) of API RP 80, may not extend beyond the furthermost downstream compressor used to increase gathering line pressure for delivery to another pipeline.

Paragraph A - FAQs

- A.14 If an operator has more than one control room that independently controls separate pipeline systems, must all control rooms use the same procedures, SCADA displays, shift rotations, alarm management practices, etc?
  - Separate control rooms may have their own specific CRM programs.
  - Each control room management program can be tailored to the unique aspects of the control room and its related pipeline system.
  - PHMSA would expect any differences between the CRM programs to be accounted for in the operator's controller training and qualifications.
  - If, however, one control room serves as a back-up control room for another control room, then consistency and controller cross-training should be considered, and training and qualification material adjusted as necessary.

Paragraph A - FAQs

- A.17 Are controllers subject to the CRM rule if the SCADA system automatically recognizes abnormal conditions and automatically places the pipeline in a “safe” condition without human controller intervention?

  Yes, controllers are subject to the CRM rule, independent of the particular automated capabilities of the SCADA System.

- A.18 If a distribution operator has its own control room with less than 20,000 services, but shares SCADA servers with an operator that has greater than 250,000 services managed by their own control room, does it meet the exception in 49 CFR 192.631(a)(1)?

  The exception in 49 CFR 192.631(a)(1) is applicable to the control room, not the location of the SCADA server. A control room with just 20,000 services being served from that location would meet the exemption for number of services.

Paragraph A - FAQs

- A.19 A gas distribution holding company operates multiple distribution systems in several cities. Each of the operating entities has its own SCADA system and control room. None has any compressor stations. None of the individual entities has over 250,000 services. However, collectively, the holding company has over 250,000 services. Do any of these operating entities meet the exceptions in 49 CFR 192.631(a)(1) if they are owned by the same company?

Paragraph A - FAQs

Answer to A.19

- The exceptions in 49 CFR 192.631(a)(1)(i)and (ii) are for the control room. There is no language in the regulation regarding exemptions concerning holding companies or operating entities.
- Each independent control room in this scenario will meet the exception in 192.631(a)(1)(i) and (ii) and therefore will need to comply with only the requirements for fatigue management, validation, and compliance and deviations.
- However, if any of these control rooms serve as a back-up for other control rooms, then the combined number of services during back-up conditions may exceed the criteria for the exemption and would be required to comply with the entire CRM rule.

Paragraph A - FAQs

- A.20 Does the CRM rule apply to a local control room and station personnel that monitor and control a local operation that is completely within the fenced boundary of the local facility?
  - Field personnel who exclusively operate station equipment within the defined station boundaries (fence lines or property/map boundaries) and **who are not responsible for connected pipelines beyond the boundaries are not considered to be remotely monitoring and controlling a pipeline. Therefore, such personnel are not considered to be controllers**.
  - However, field personnel who operate station equipment within the station boundaries and also have either full-time or part-time control room operational responsibility for connected regulated pipelines beyond the station boundaries are considered controllers.
  - *** Please note: Imaginary fences are not fences.

Paragraph A - FAQs

- A.21 Do control rooms located in Canada need to comply with the CRM rules if they control pipelines operating in the United States?

  If the operational activities in a control room impact pipeline facilities located in the United States, PHMSA will expect those activities to comply with the CRM rules. A coordinated effort between PHMSA and the National Energy Board (NEB) of Canada regarding cross-border pipeline facilities is addressed in the agencies' written arrangement dated November 2005, which is available on the PHMSA website.

- A.22 What does "services" mean in 192.631(a)(1)(i)?

  "Services" means the number of services as reported on the operators annual report submitted to PHMSA in accordance with 49 CFR 191.11.

U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

CRM Jurisdiction

of Natural Gas Pipeline Facilities

Terms

Black symbols and terms refer to gas supply lines

Red symbols and terms refer to subject LDC/s

LDC Service Area

Connection between Field Equipment and Control Room/SCADA

R — Regulator

C — Compressor

W — Producing Well

Property Fence

???

Third Party
Transmission Line

LDC
Trans Line

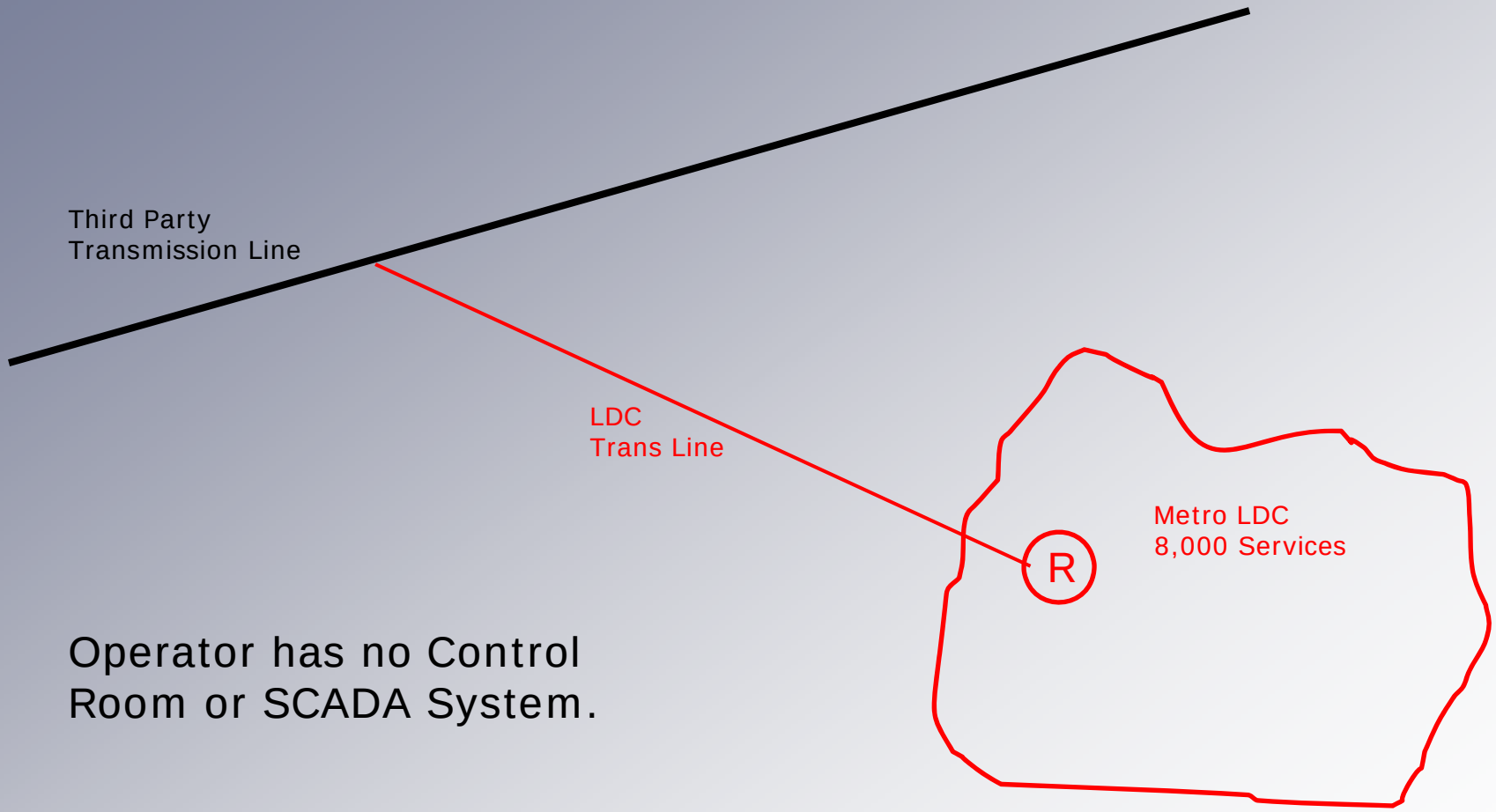
R

Metro LDC
8,000 Services

Operator has no Control Room or SCADA System.

Metro LDC – no SCADA or control room

No CRM



Operator has no Control Room or SCADA System.

Metro LDC – no SCADA or control room

???

Third Party
Transmission Line

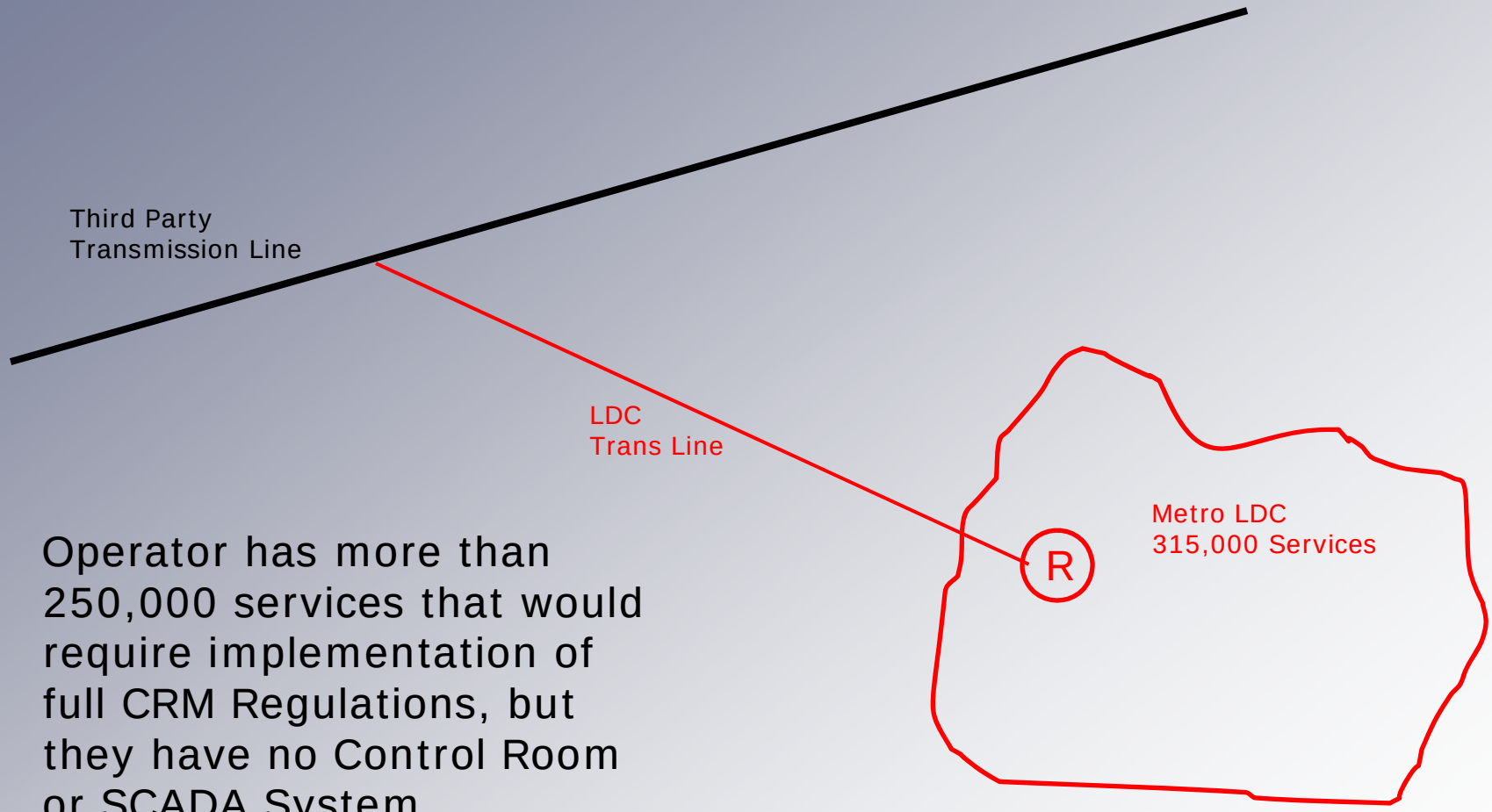
LDC
Trans Line

R

Metro LDC
315,000 Services

Metro LDC – no SCADA or control room

No CRM



Operator has more than 250,000 services that would require implementation of full CRM Regulations, but they have no Control Room or SCADA System. Therefore, no CRM Requirements.

???

Third Party
Transmission Line

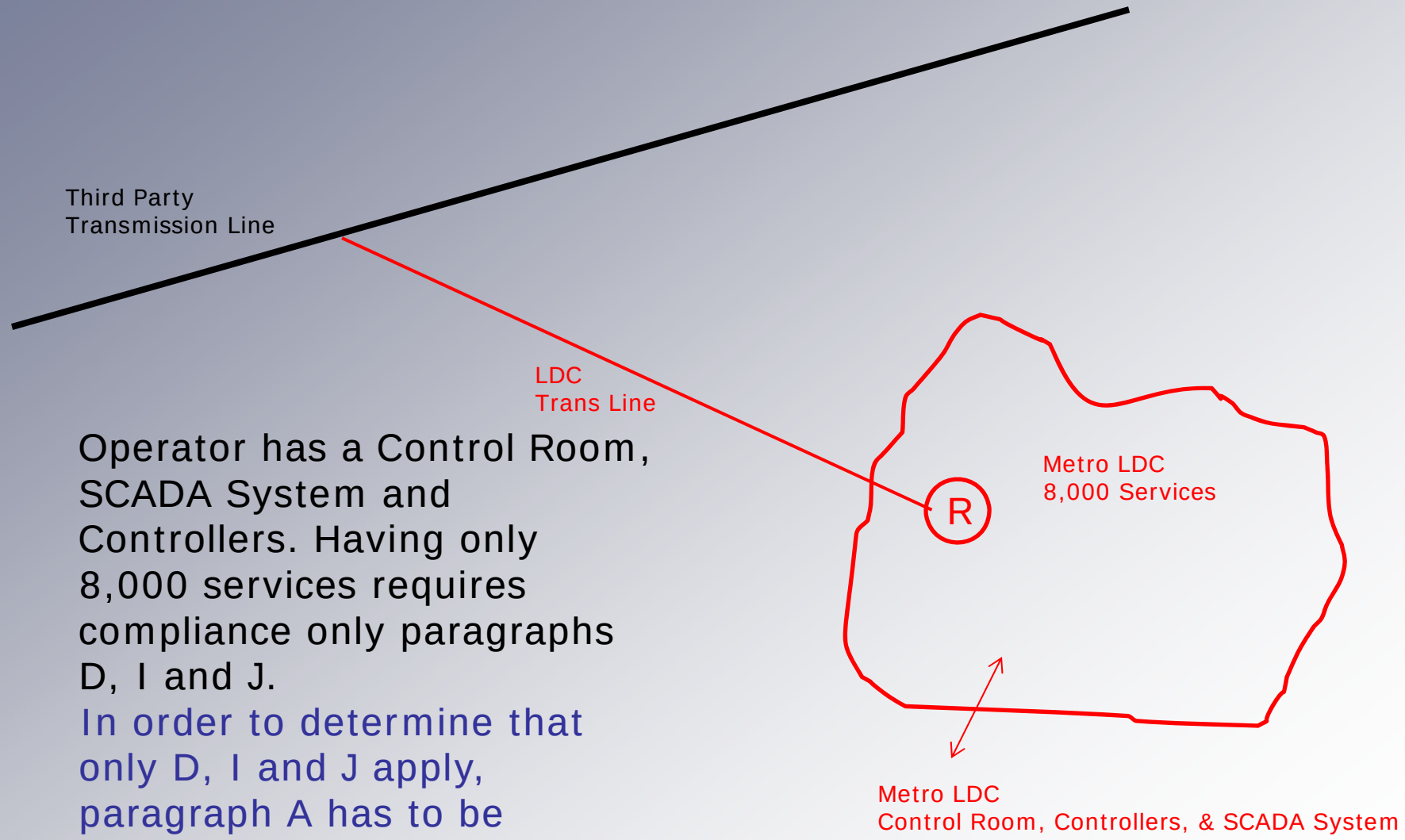
LDC
Trans Line

R

Metro LDC
8,000 Services

Metro LDC
Control Room, Controllers, & SCADA System

(a)(d)(i)(j)



Operator has a Control Room, SCADA System and Controllers. Having only 8,000 services requires compliance only paragraphs D, I and J.

In order to determine that only D, I and J apply, paragraph A has to be reviewed.

???

Third Party
Transmission Line

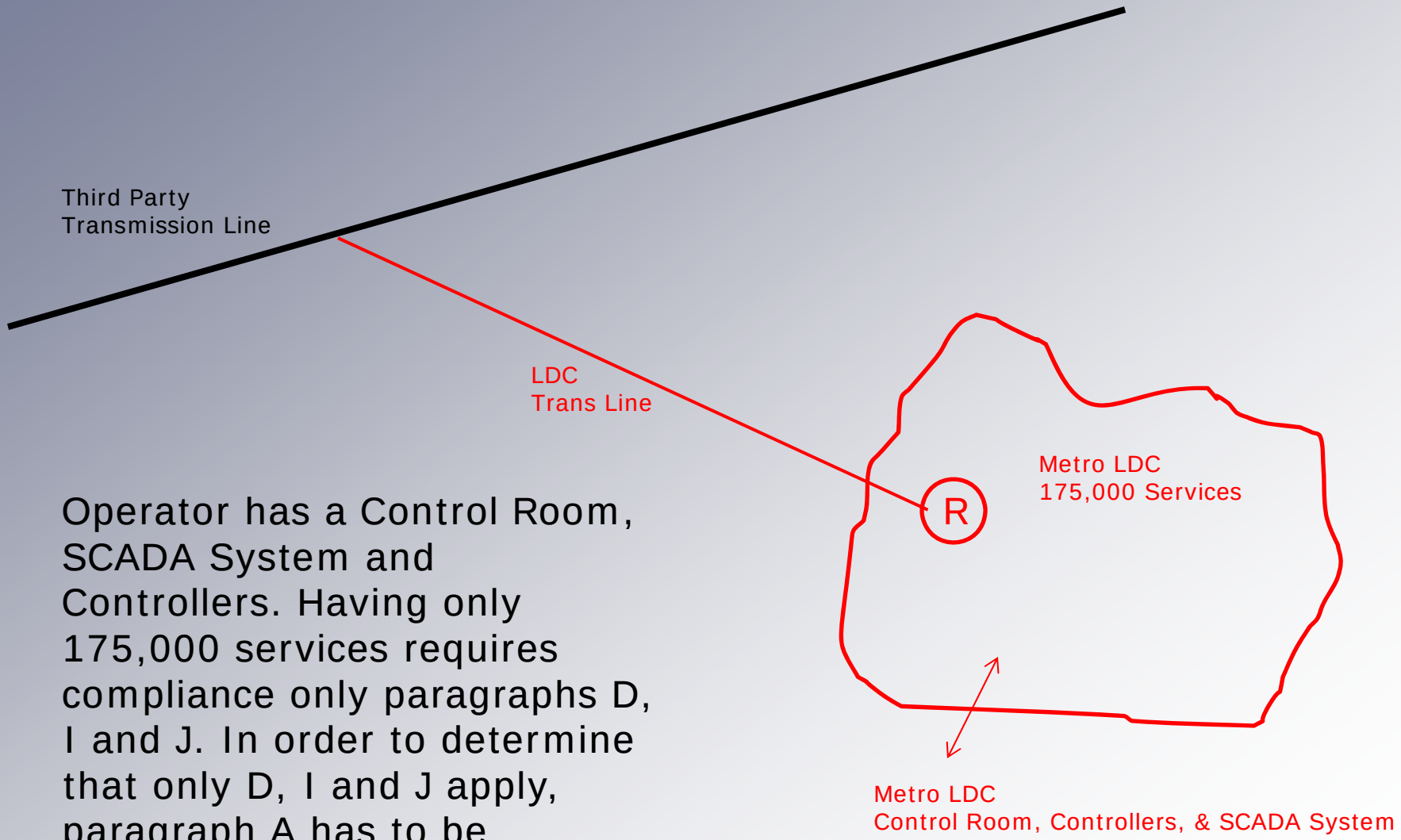
LDC
Trans Line

R

Metro LDC
175,000 Services

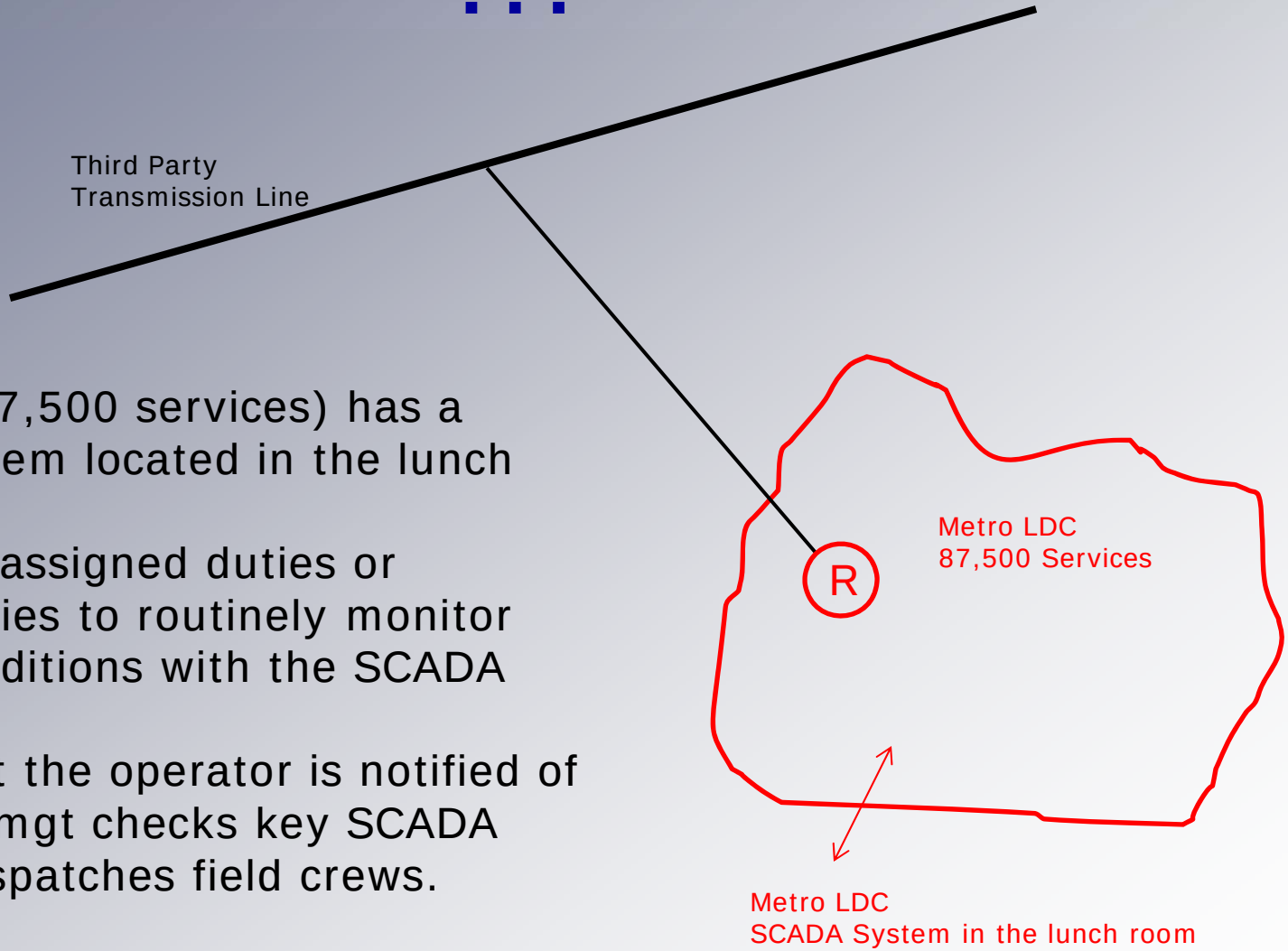
Metro LDC
Control Room, Controllers, & SCADA System

(a)(d)(i)(j)



Operator has a Control Room, SCADA System and Controllers. Having only 175,000 services requires compliance only paragraphs D, I and J. In order to determine that only D, I and J apply, paragraph A has to be reviewed.

???

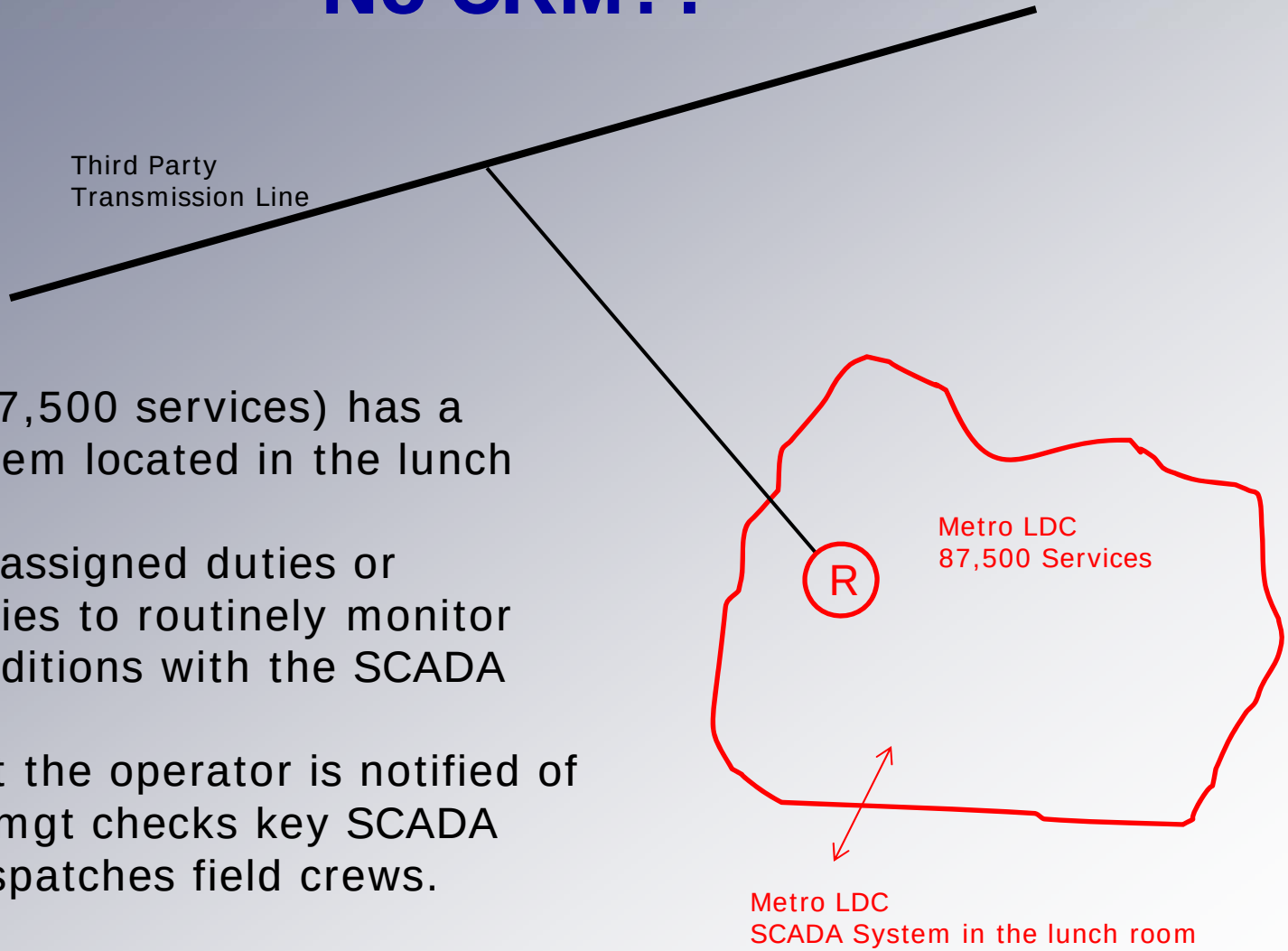


Operator (87,500 services) has a SCADA System located in the lunch room.

No one has assigned duties or responsibilities to routinely monitor pipeline conditions with the SCADA System.

In the event the operator is notified of a problem, mgt checks key SCADA data and dispatches field crews.

No CRM??



Operator (87,500 services) has a SCADA System located in the lunch room.

No one has assigned duties or responsibilities to routinely monitor pipeline conditions with the SCADA System.

In the event the operator is notified of a problem, mgt checks key SCADA data and dispatches field crews.

In general….the regulating entity will make the determination of CRM requirements.

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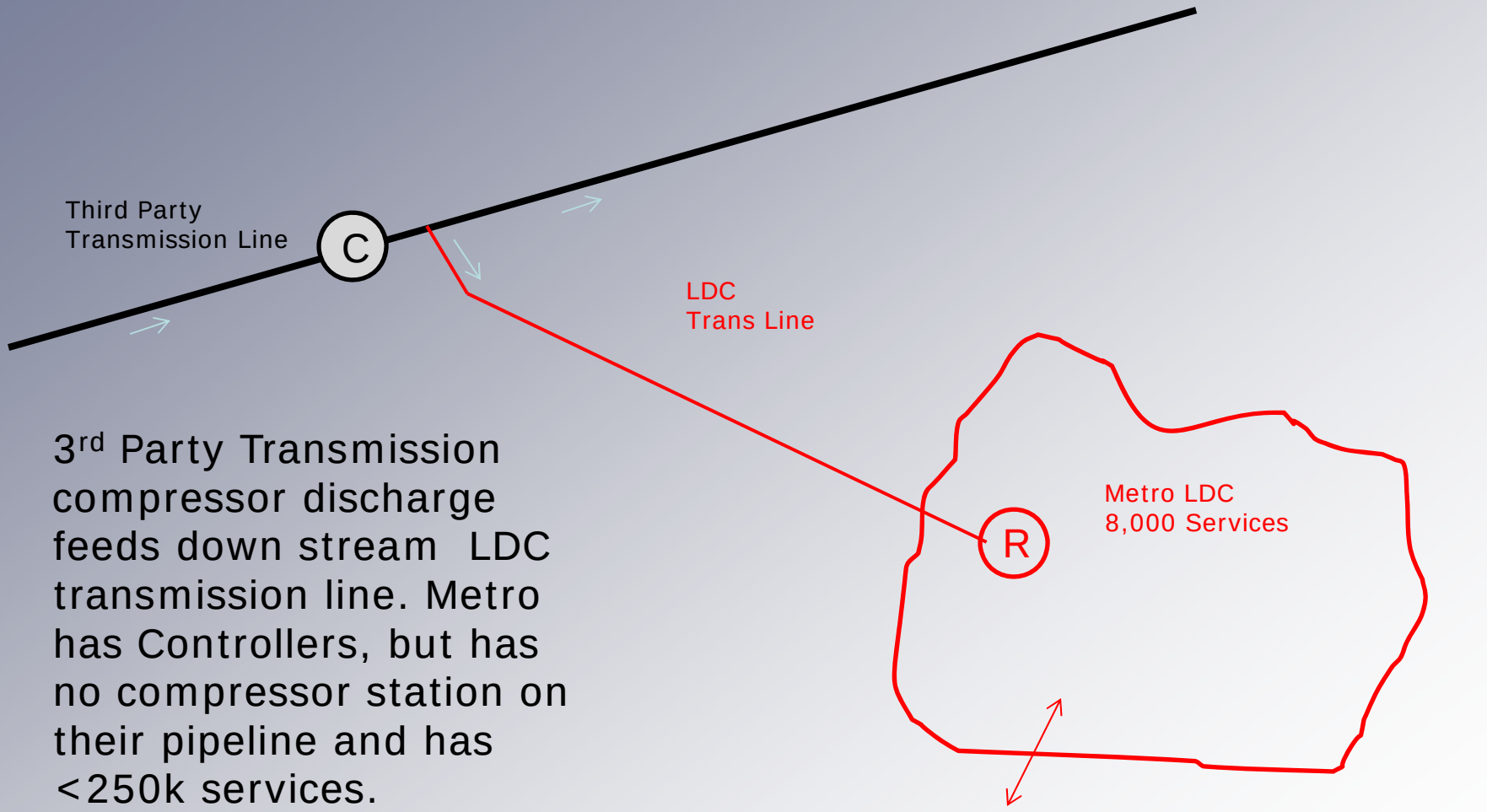
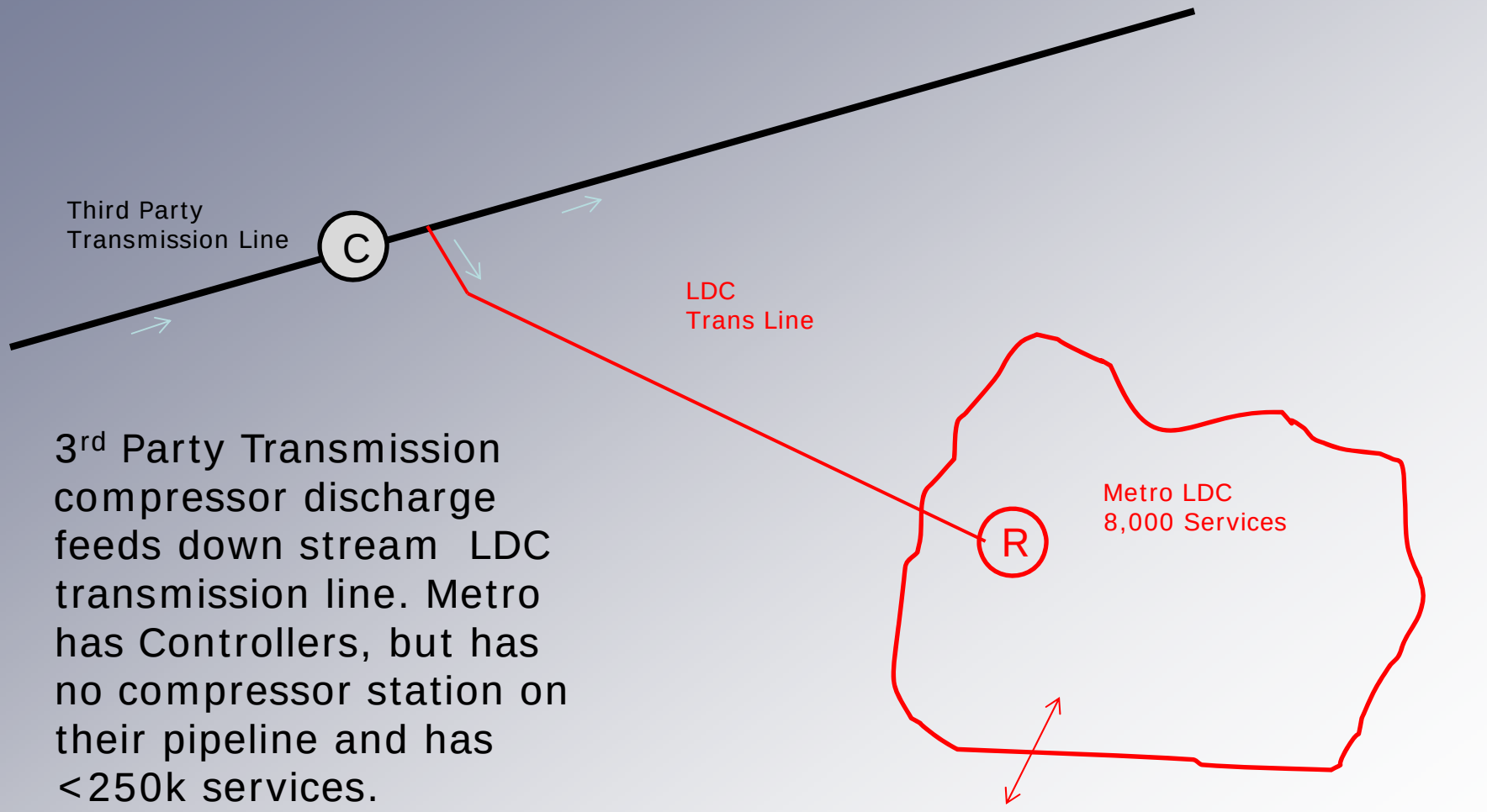


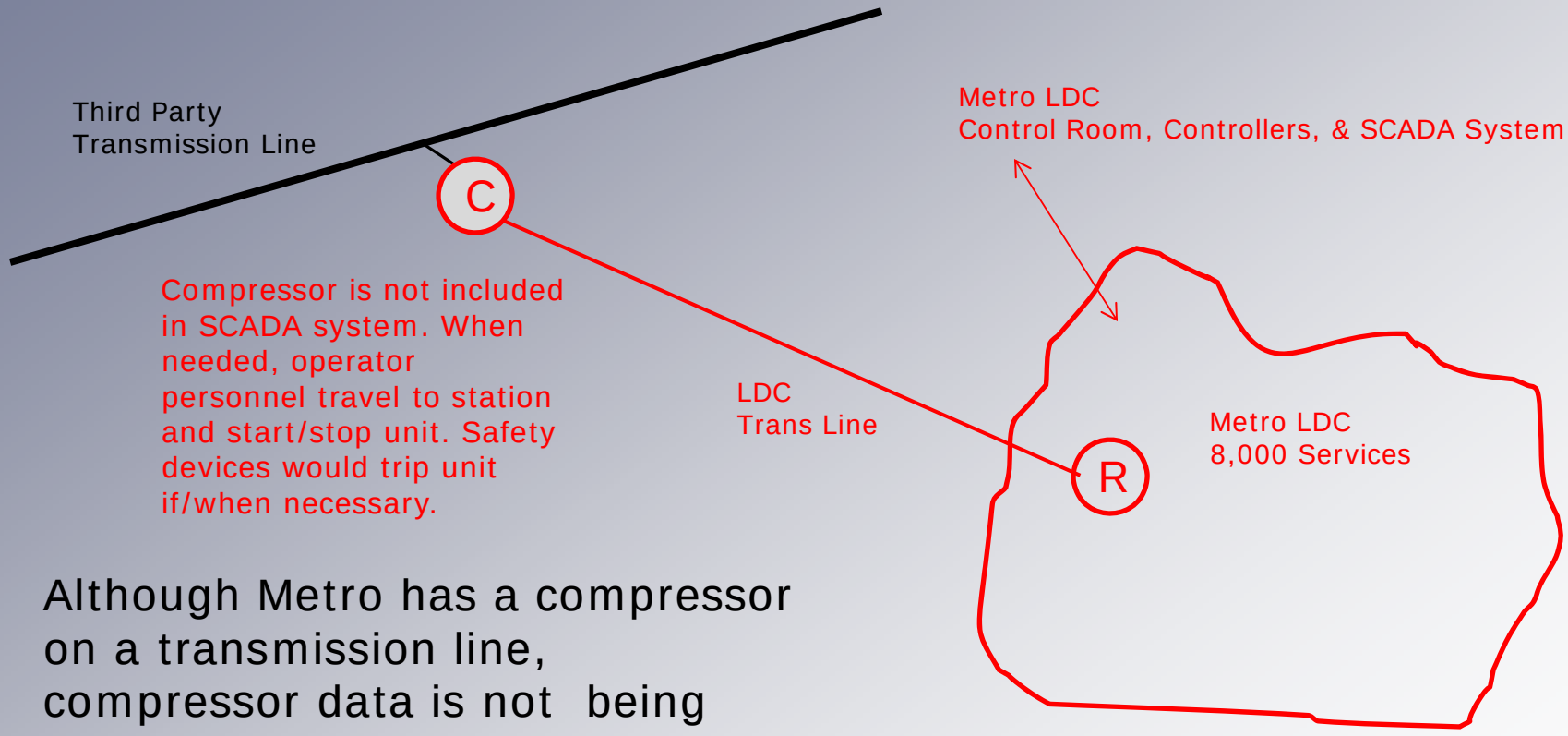
3rd Party Transmission compressor discharge feeds down stream LDC transmission line. Metro has Controllers, but has no compressor station on their pipeline and has <250k services.

(a)(d)(i)(j)



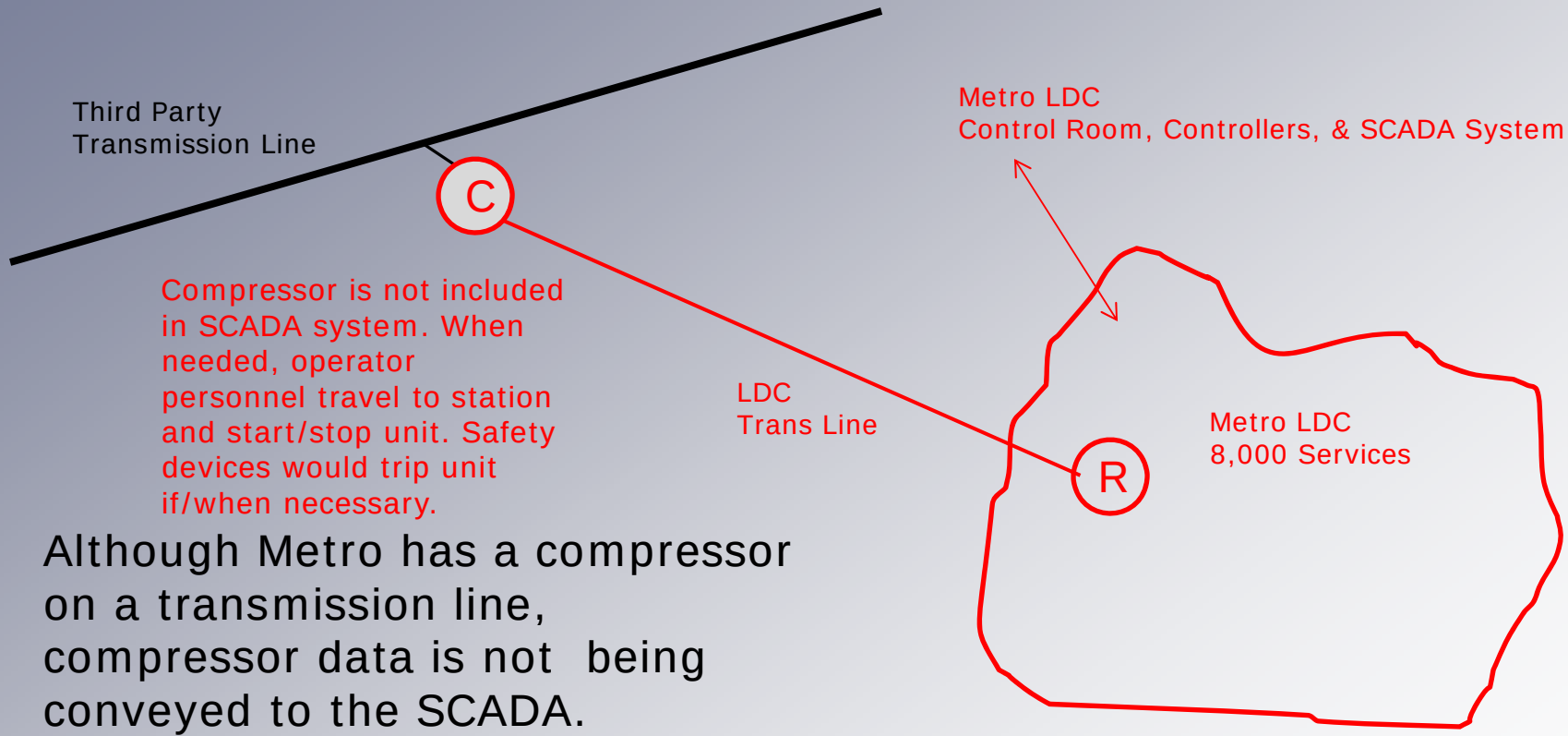
3rd Party Transmission compressor discharge feeds down stream LDC transmission line. Metro has Controllers, but has no compressor station on their pipeline and has <250k services.
They fall below the threshold for the full set of CRM regulations.

???



Although Metro has a compressor on a transmission line, compressor data is not being conveyed to the SCADA.

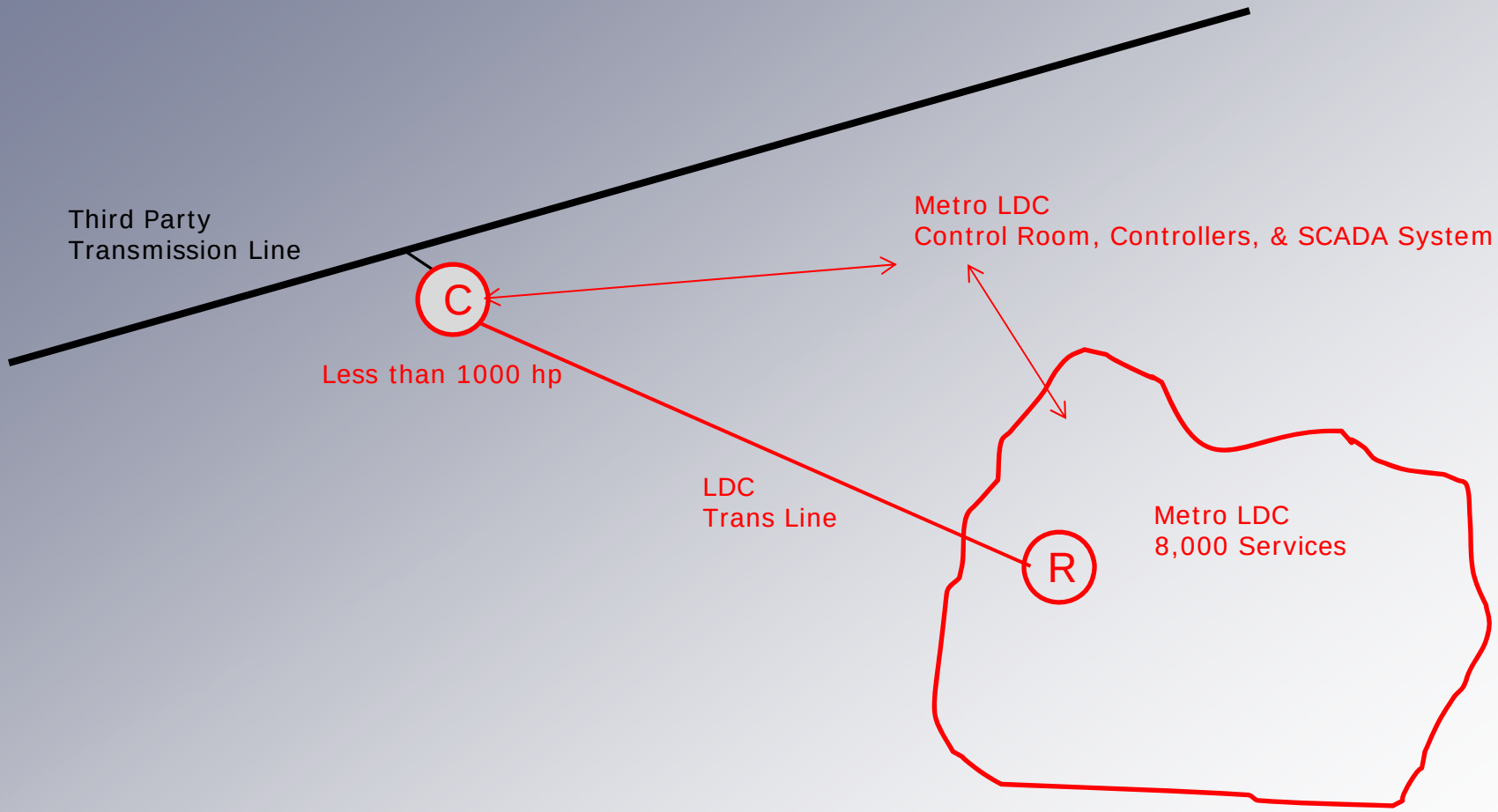
(a)(d)(i)(j)??



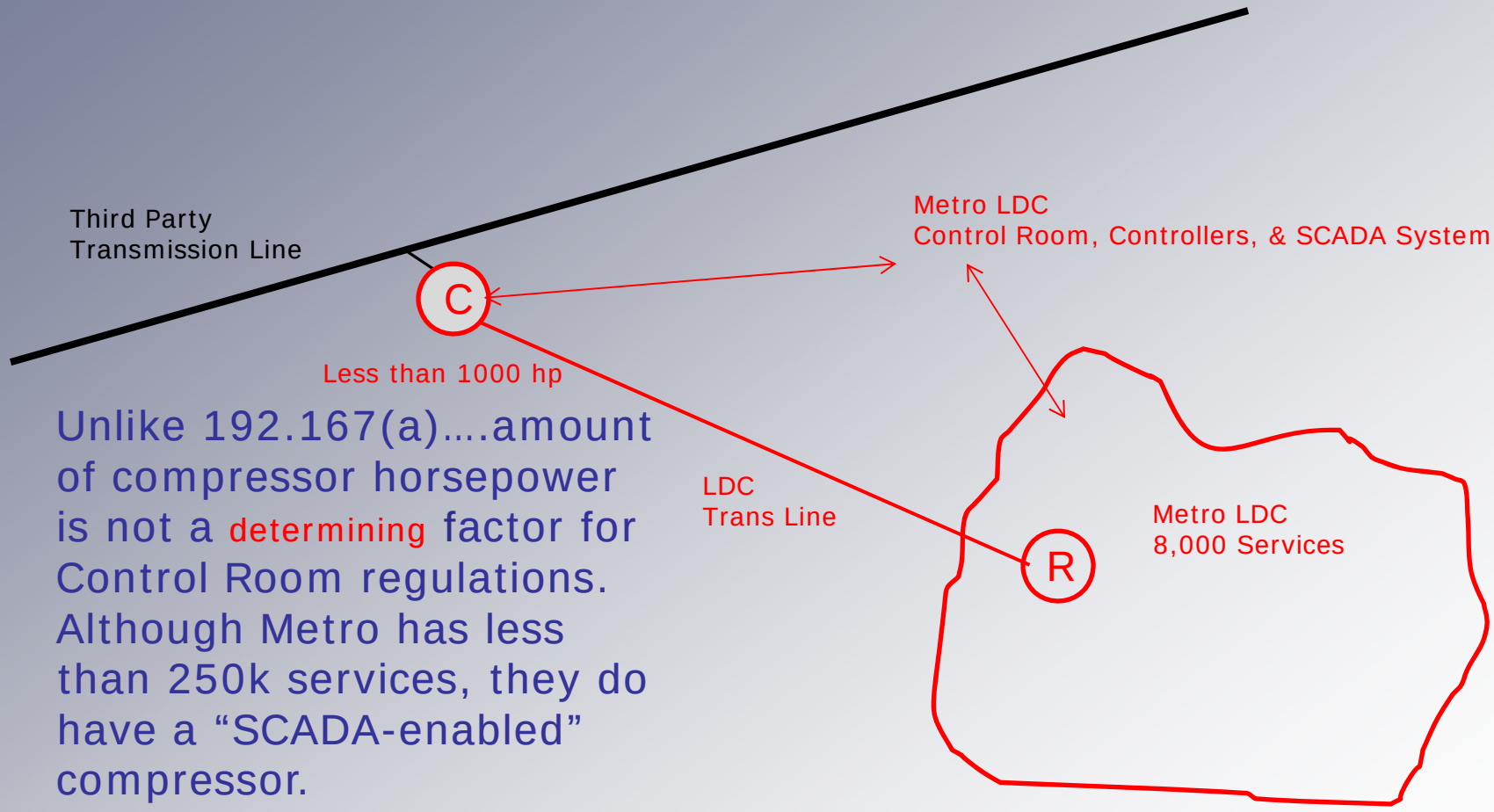
Although Metro has a compressor on a transmission line, compressor data is not being conveyed to the SCADA.
Since the operator has less than 250k services and does not have a “SCADA-enabled” compressor, only D,I and J are required.
MIGHT BE DIFFERENT IF SETPOINTS ARE USED


1203

???

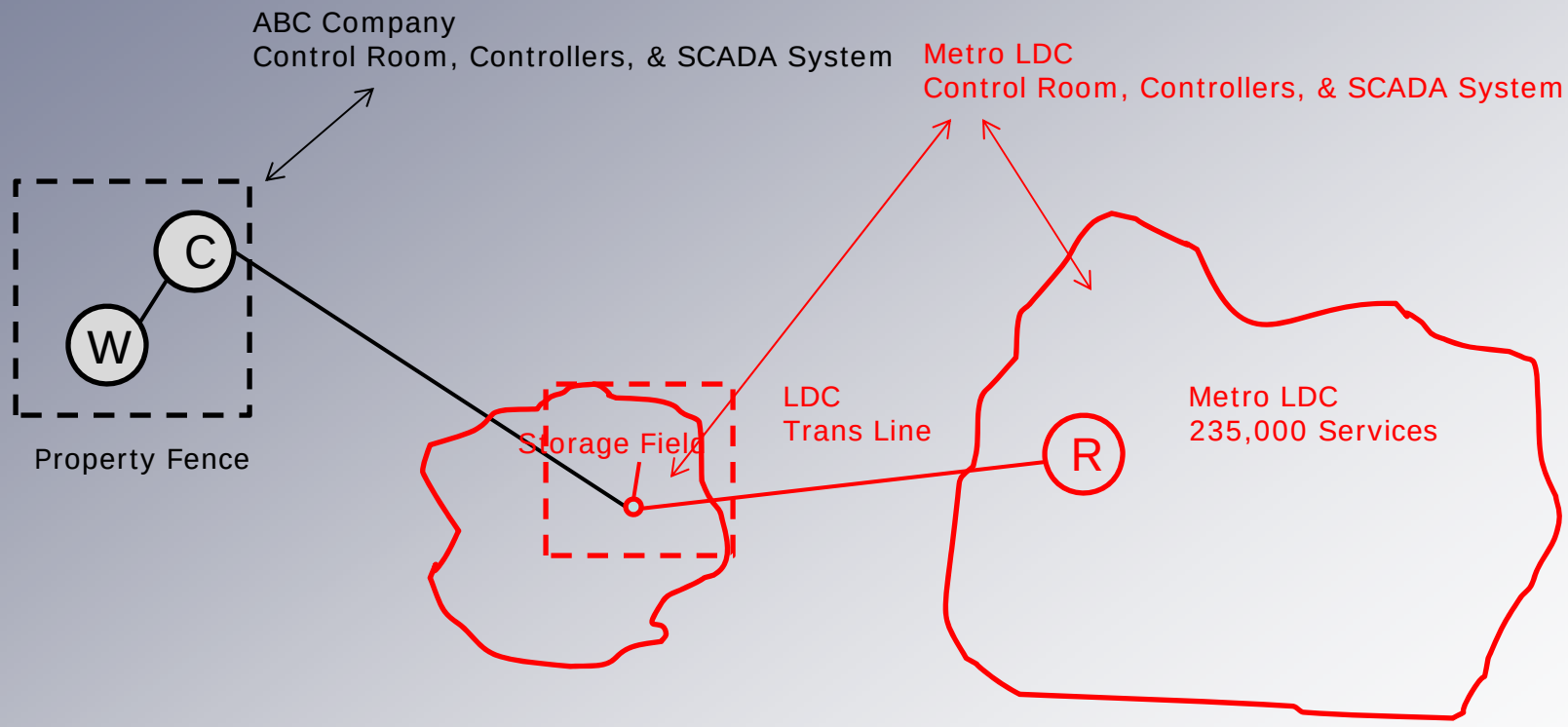

Third Party
Transmission Line
C
Less than 1000 hp
Metro LDC
Control Room, Controllers, & SCADA System
LDC
Trans Line
R
Metro LDC
8,000 Services

Full Program

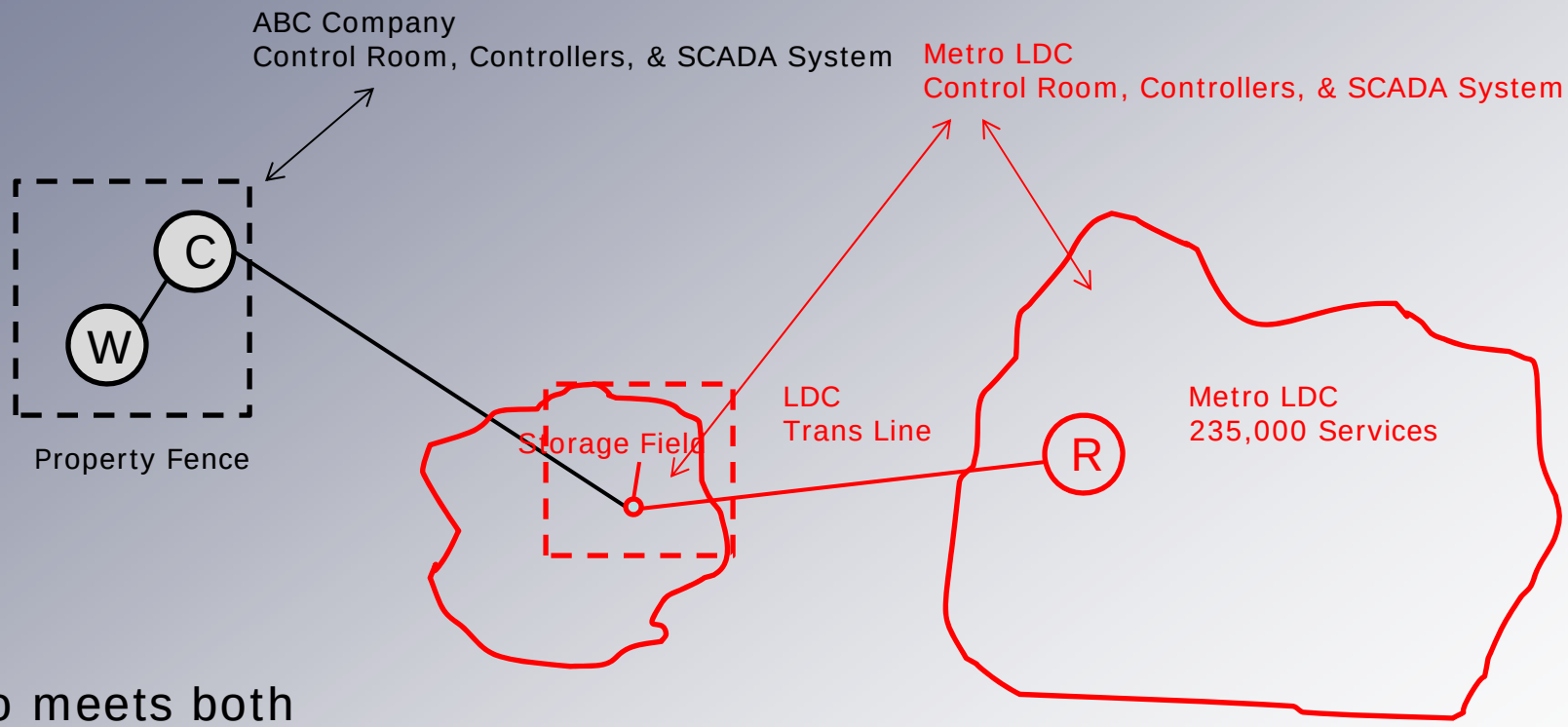


Unlike 192.167(a)….amount of compressor horsepower is not a determining factor for Control Room regulations.
Although Metro has less than 250k services, they do have a “SCADA-enabled” compressor.
Operator meets the criteria for the full set of CRM requirements.

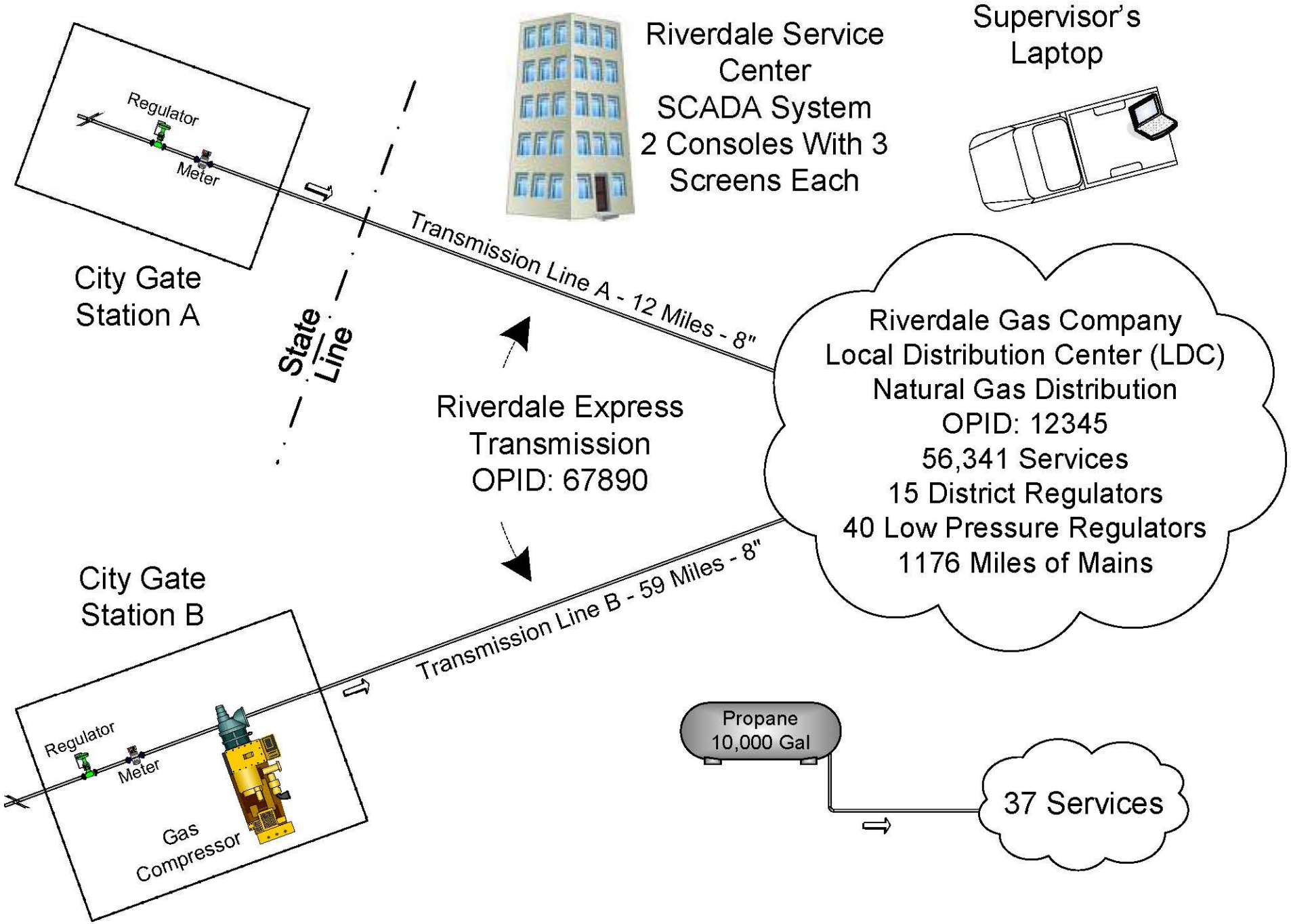
??? For Metro LDC



Metro (a)(d)(i)(j)



Metro meets both exclusions.
Less than 250K services and no compression on their transmission line.


Regulator
Meter
City Gate
Station A
State
Line
Riverdale Service
Center
SCADA System
2 Consoles With 3
Screens Each
Supervisor's
Laptop
Transmission Line A - 12 Miles - 8"
Riverdale Express
Transmission
OPID: 67890
Riverdale Gas Company
Local Distribution Center (LDC)
Natural Gas Distribution
OPID: 12345
56,341 Services
15 District Regulators
40 Low Pressure Regulators
1176 Miles of Mains
City Gate
Station B
Transmission Line B - 59 Miles - 8"
Regulator
Meter
Gas
Compressor
Propane
10,000 Gal
37 Services