

REGULAR SESSION –WEDNESDAY, SEPTEMBER 16, 2020

STATE OF KANSAS)
) SS
CITY OF KANSAS CITY)

The Board of Public Utilities of Kansas City, Kansas (aka BPU, We, Us, Our) met remotely in Regular Session on Wednesday, September 16, 2020 at 6:00 P.M. The following Board Members were on the teleconference: Mr. Eidson, President; Robert L. Milan, Vice President; Mary Gonzales, Secretary; Jeff Bryant, Rose Mulvany Henry and Thomas Groneman.

Also on teleconference: William Johnson, General Manager; Angela Lawson, Deputy Chief Counsel; Lori Austin, Chief Financial Officer/Chief Administrative Officer; Jim Epp, Executive Director Water Operations; Johnnetta Hinson, Executive Director Customer Service; Jeremy Ash, Executive Director Electric Operations; Dong Quach, Executive Director Electric Production; Jerry Ohmes, Executive Director Electric Supply; Robert Kamp, IT Project Manager; Jody Franchett, Director Administrative Services; David Mehlhaff, Chief Communications Officer; Dennis Dumovich, Director of Human Resources; Sperlynn Byers, Acting Director of Information Technology; Patrice Townsend, Director Utility Services; Chad Newbill, Senior Mechanical Engineer; Steve Green, Director Water Distribution; Chris Stewart, Director Civil Engineering.

A tape of this meeting is on file at the Board of Public Utilities.

Mr. Eidson called the Board Meeting to order at 6:00 P.M. He welcomed all that were listening or viewing the meeting. He stated the COVID-19 pandemic had resulted in a State of Emergency disaster declared by the Governor which made it necessary to conduct the meeting using technology instead of in person. Those wishing to offer comments during the Visitors Comments section could click on the raised hand feature at the bottom of the application or window or press Star 9 and be connected by phone. As always, the public could email or call the BPU with any concerns. The Agenda could be found on the BPU website. If you were using Zoom, it would appear on your screen. Mr. Eidson introduced himself and the other Board Members along with the GM, and Legal Counsel.

Roll call was taken and all Board Members were present via teleconference.

Item #3 – Approval of Agenda

A motion was made to approve the Agenda by Ms. Gonzales, seconded by Mr. Groneman, and carried.

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Item #4 – Approval of the Minutes

A motion was made to approve the Minutes of the Regular Session of September 2, 2020 by Mr. Bryant seconded by Mr. Groneman, and carried.

Mr. Eidson turned the meeting over to Mr. Bill Johnson, General Manager.

Item #5 – Visitors

Mr. Johnson asked Mr. Robert Kamp, IT Project Manager, if there were any visitors wishing to speak.

Mr. Kamp said that no one had their hand raised via teleconference.

Item #6 – General Manager’s Reports

- i. COVID-19 Update:* Mr. Johnson gave an update on company COVID -19 matters. He reported to the Board that the State had reviewed and accepted most of what was proposed in the Unified Government's CARE Act submission. He would continue to update as things progress.
- ii. Water Main Replacement Program:* Mr. Jim Epp, Executive Director Water Operations, Mr. Chris Stewart, Director Civil Engineering, and Mr. Steve Green, Director Water Distribution, presented a review on what had been accomplished and what was planned for the future, in an update on the Water Main Replacement Program in a PowerPoint presentation (see attached).

Mr. Stewart and Mr. Green answered questions from the Board.

- iii. Nearman CT4 Update:* Mr. Dong Quach, Executive Director Electric Production and Mr. Chad Newbill, Senior Mechanical Engineer, gave a PowerPoint update on Nearman Power Plant CT 4 Fuel Nozzle Refurbishment (see attached).

Mr. Johnson also asked Mr. Quach to update the Board on the upcoming Nearman outage.

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Mr. Quach reported that Nearman would be off for five weeks beginning October 9, 2020. The two key projects to be underway at that time would be the middle liner replacement and the turbine valve repairs.

Mr. Quach and Mr. Newbill answered questions from the Board.

- iv. *Miscellaneous Comments:* Mr. Johnson told the Board that budget discussions were beginning and that they would be receiving the schedule soon, as well as invites for budget related Work Sessions.

Item #7 – Board Comments

Mr. Eidson thanked all for their presentations.

Mr. Groneman thanked everyone for the updates and reminded everyone to stay safe.

Mr. Milan thanked the staff for their reports.

Mr. Bryant appreciated the updates on the utility and the work that went into the presentations. He also reminded all to stay safe.

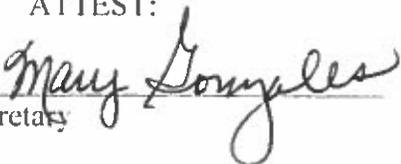
Ms. Gonzales echoed her thanks to the staff on the information presented.

Ms. Mulvany Henry also thanked the staff on the evening's presentations.

Item #8 – Adjourn

Motion was made to adjourn the meeting at 7:07 P.M. by Ms. Gonzales, seconded by Ms. Mulvany Henry and carried.

ATTEST:


Secretary

APPROVED:


President

Small Diameter Main Replacement Program

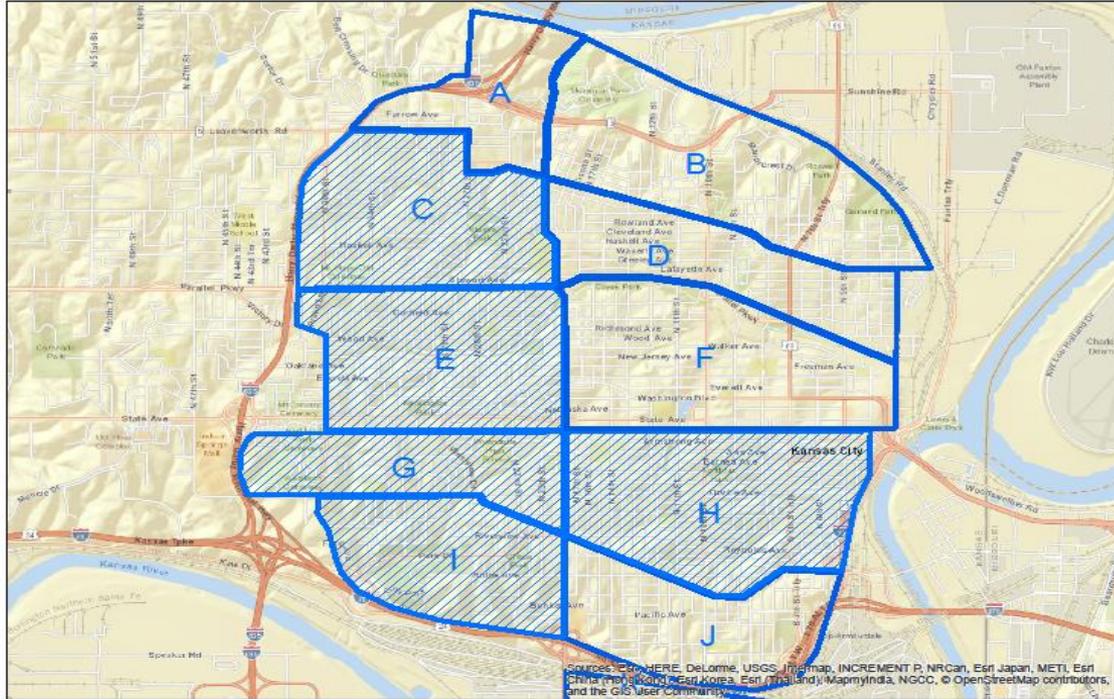
Sep 16, 2020



Small Diameter Main Replacement KDHE Funding

- Area East of I- 635
- Divided into 18 areas along major streets to manage workload
- Prioritized on the basis of historical number of leaks per mile
- Concentrated on Mains with Leak per mile per year > 1.5
- Total of 83 miles of 2 inch and smaller in system

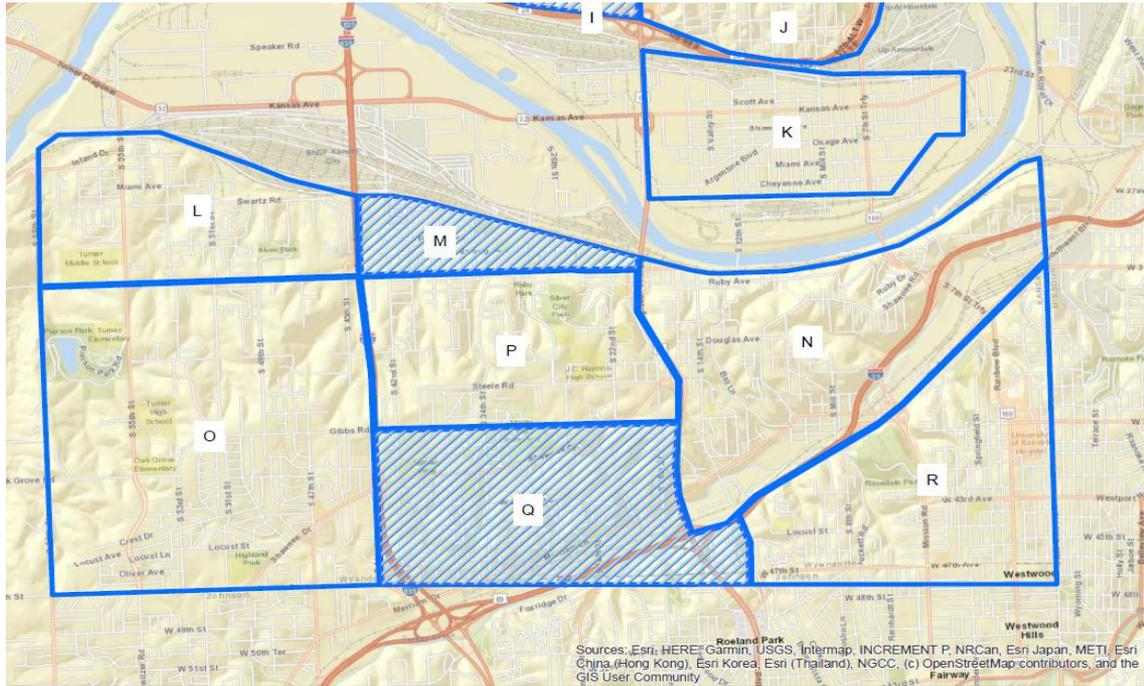
Area Map North of I-70



SOURCES: HERE, DeLorme, USGS, InMap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (not stored), Esri Korea, Esri (not stored), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

 COMPLETED AREAS

Area Map South of I-70



Legend
 PHASE I PARTIAL COMPLETION

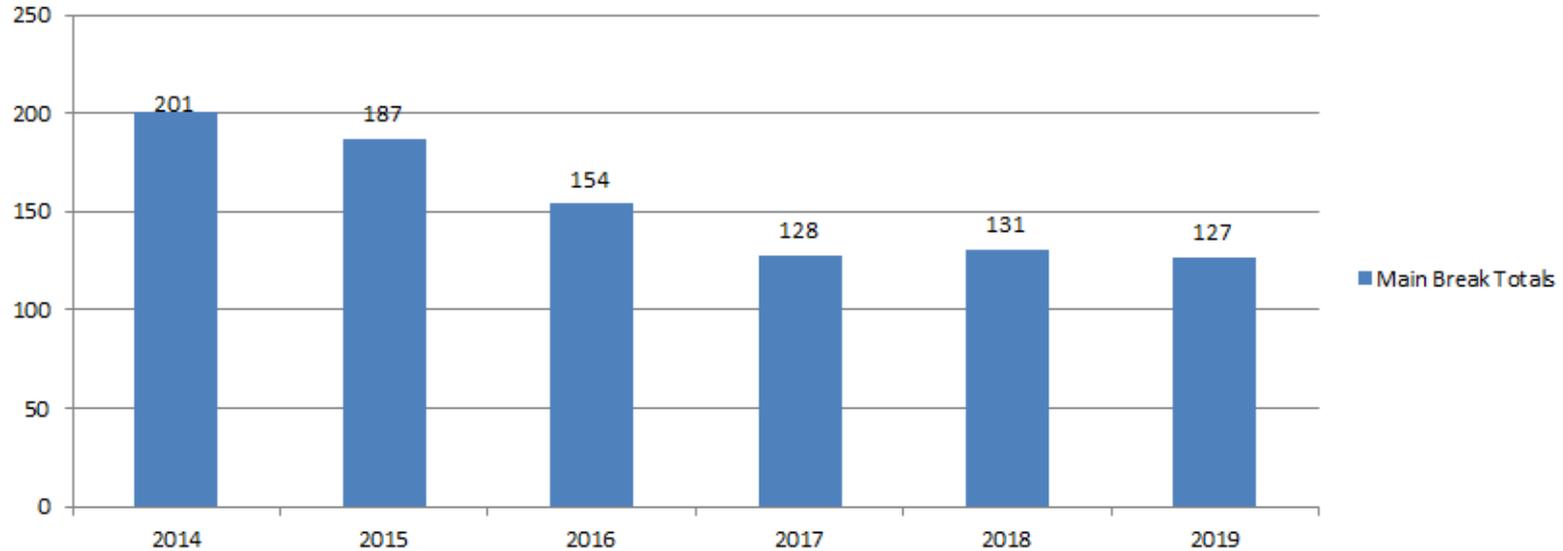


Small Diameter Main Replacement Phase I 2014-2019

- 7.9 miles of 2 inch main
- 8.6 miles of 6 inch main
- 1.2 miles of 8 inch main
- 1,683 customers with new service to M/B
- Total : 17.7 Miles
- Cost : \$10,400,000

Main Break Total for 2 inch Diameter

Main Break Total for 2 Inch and Smaller



Data Analysis Phase I Improvements

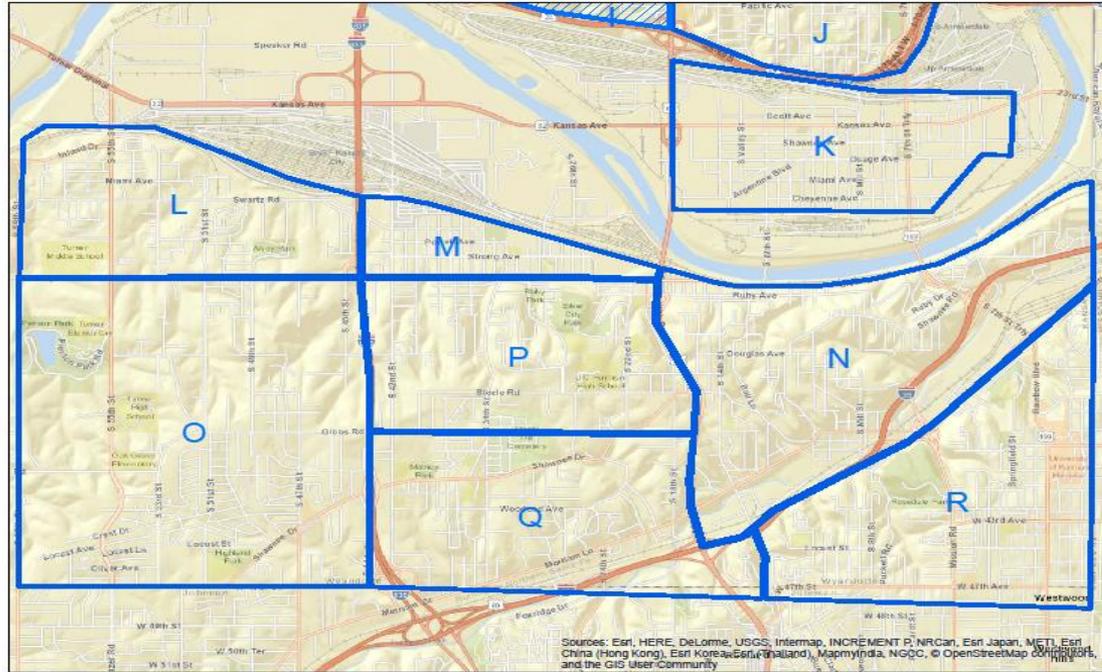
- 2 Inch Main Breaks - 33% of total breaks in 2014.
- 2 Inch Main Breaks - 25 % of total breaks in 2019
- Anticipated a reduction of 70 breaks per year for 2 inch
- 2017,2018,2019 trending with a reduction of 70 breaks per year
- Savings in Repair Cost - \$200,000 per year
- Improved Fire Protection



Future Main Replacement KDHE (2021 - 2025)

- Future KDHE Loan : Approved for KDHE Intended Use Plan in 2020
- 2021 - 2025 KDHE Projects: 2 inch and 4 inch water mains
- Primary Locations - Area O, P, Q, R
- Contingent Upon Rate Increase

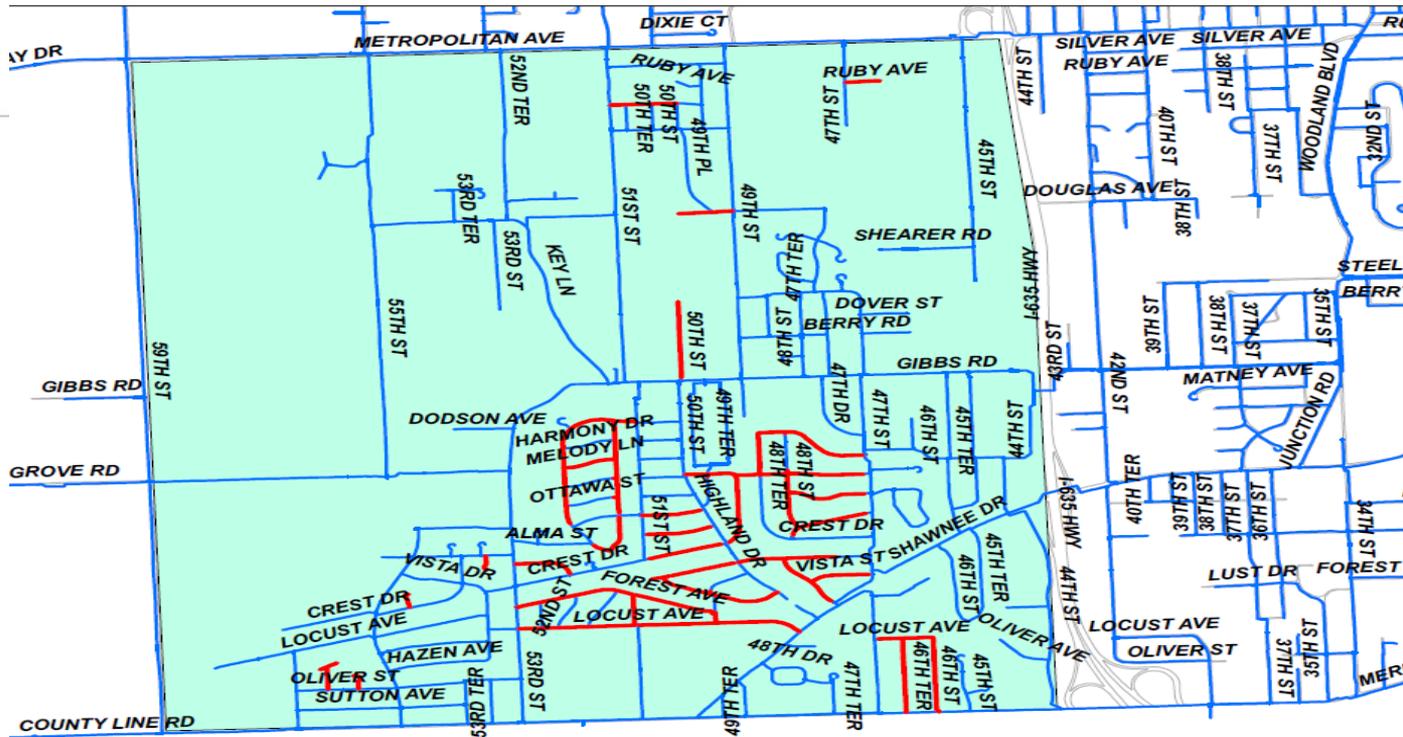
2021-2025 Area South of I-70



4 Inch Diameter Leak Analysis

- AWWA Criteria : 0.3 leaks per mile / Year
- Area O: _____ 555 Leaks: 3.6 Leaks per Mile / Year
- Area P: _____ 124 Leaks: 3.1 Leaks Per Mile / Year
- Area Q: _____ 290 Leaks: 2.8 Leaks Per Mile / Year
- Area R: _____ 108 Leaks: 1.8 Leaks per Mile / Year

AREA O



Area O Data

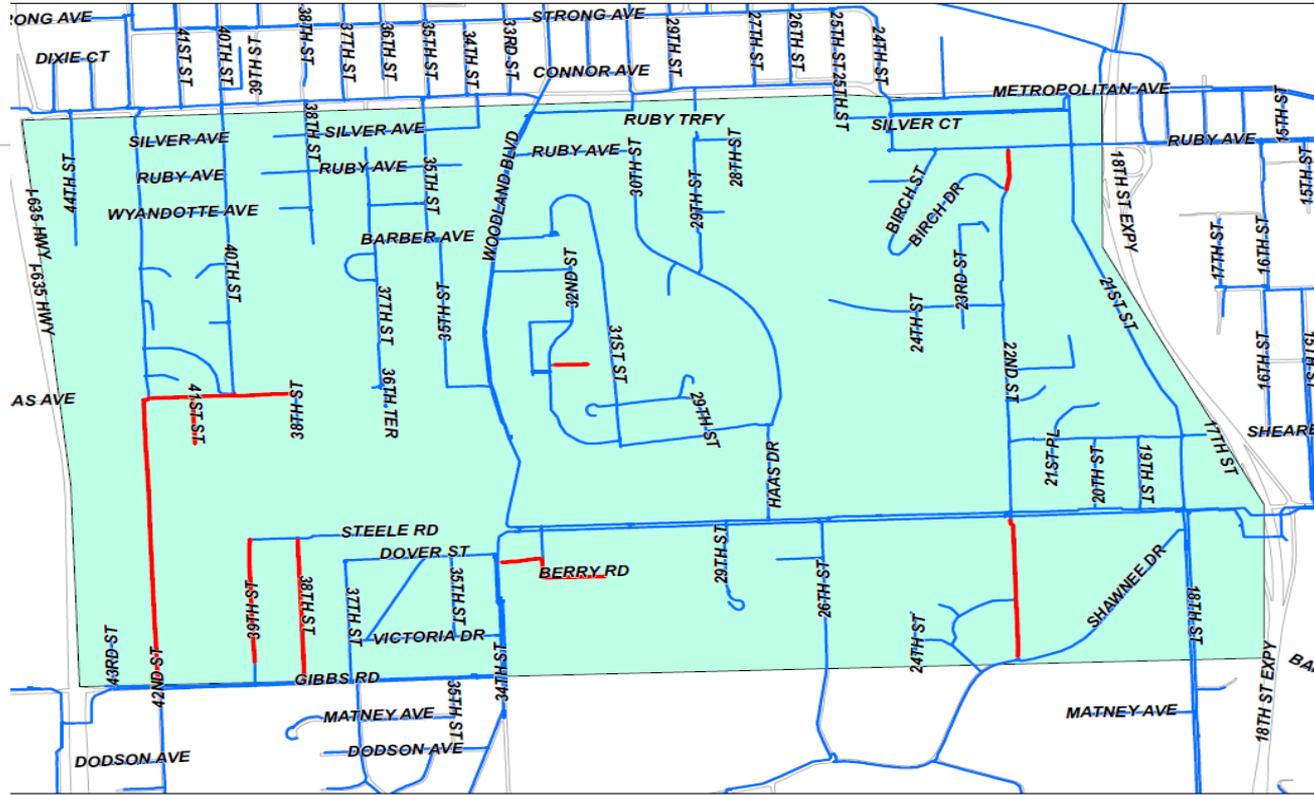
Number of Leaks: 555
 Length of Pipe: 34250
 Leaks per Mile: 91
 Replacement Cost @ \$125 per foot: \$4,281,374.46

Legend

- 4in Main with Leaks
- Network Main
- Area O



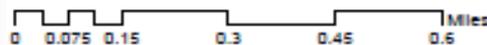
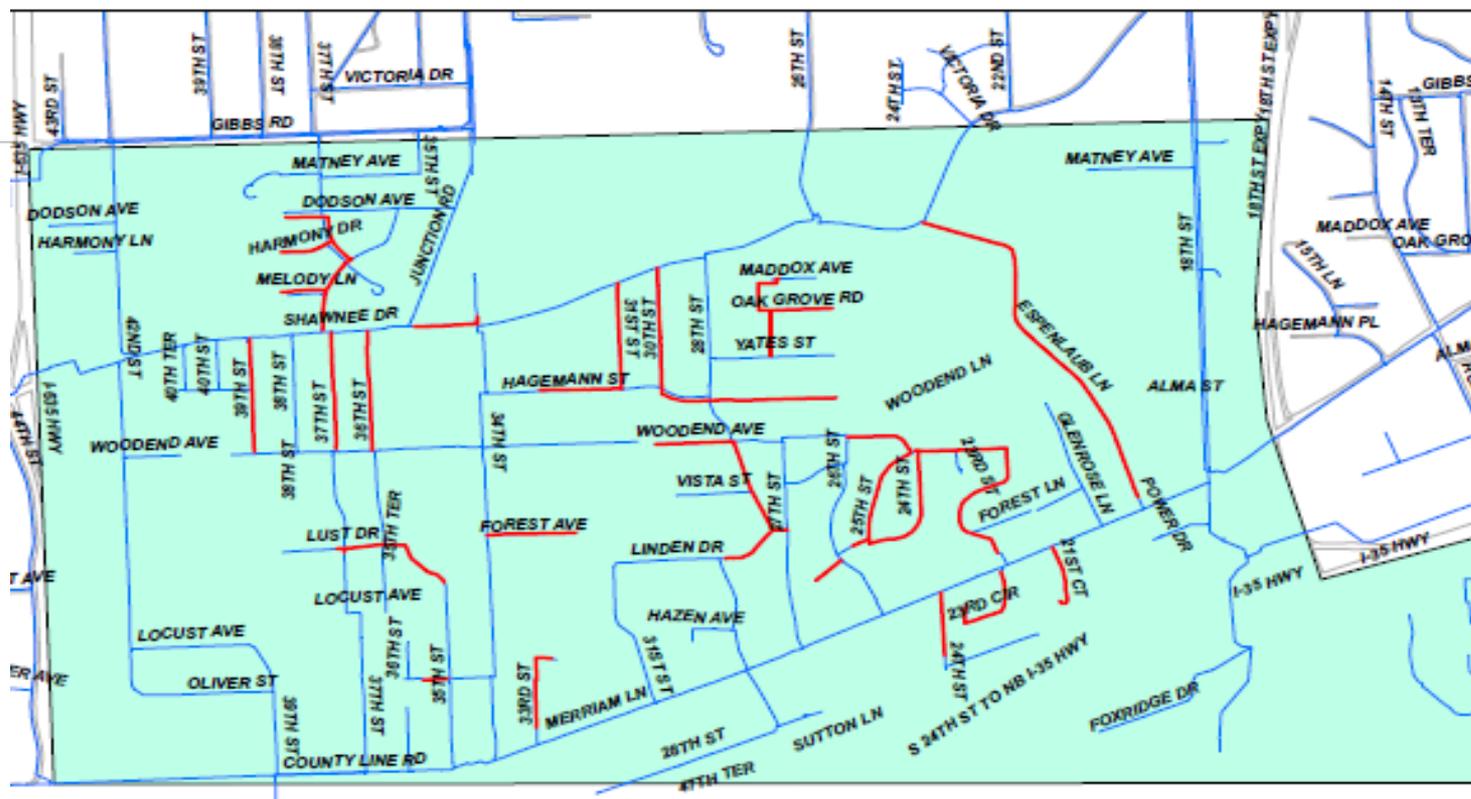
AREA P



Area P Data
 Number of Leaks: 124
 Length of Pipe: 9487
 Leaks per Mile: 79
 Replacement Cost @ \$125 per foot: \$1,185,985.75

- Legend**
- 4in Mains with Leaks
 - Network Main
 - AREA P

AREA Q



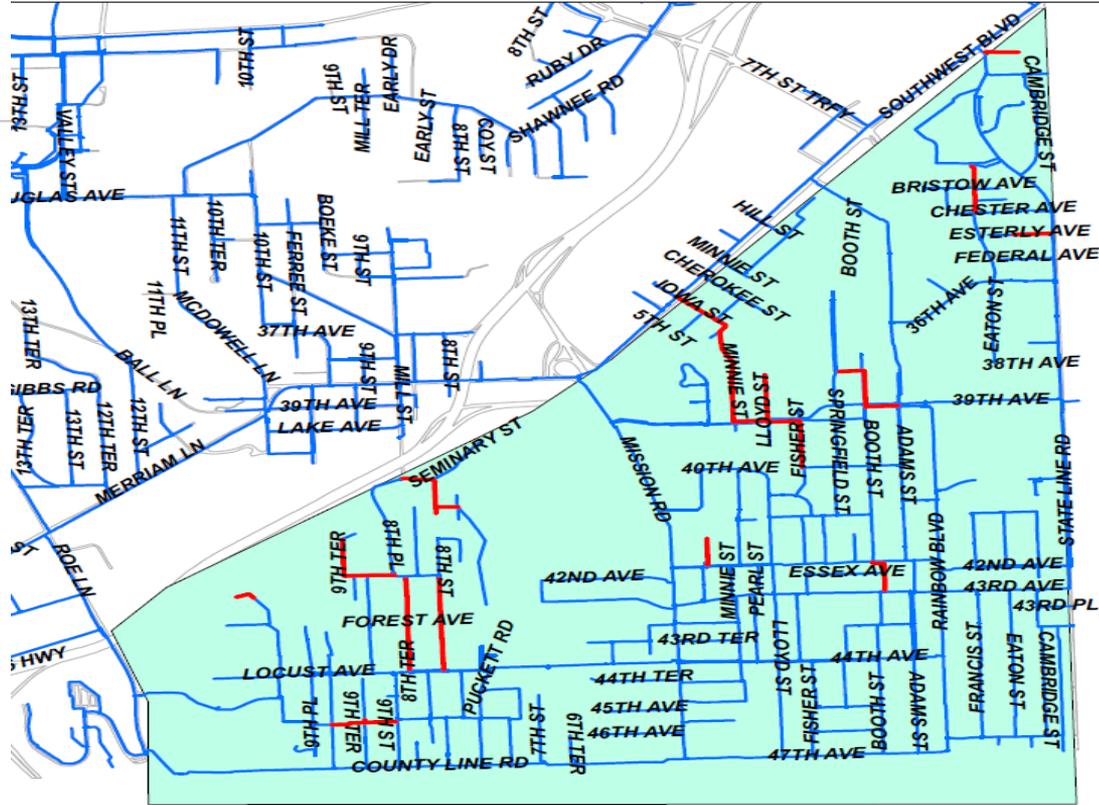
Area Q Data

Number of Leaks: 290
 Length of Pipe: 24708
 Leaks per Mile: 70
 Replacement Cost @ \$125 per foot: \$3,088,585.77

Legend

- 4in Mains with Leaks
- Network Main
- Area Q

AREA R

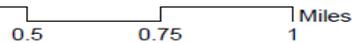


Area R Data

Number of Leaks: 108
 Length of Pipe: 12832
 Leaks per Mile: 46
 Replacement Cost @ \$125 per foot: \$1,604,066.90

Legend

- 4in Mains with Leaks
- Network Main
- Area R





Cost Summary for Replacement - Area O,P,Q,R

- 4 inch > 0.3 Break / mile / year (32 miles) : \$ 20,000,000
- 4 inch > 1 Break /mile / year (16 miles): \$ 10,000,000
- 2 inch >1.5 Break/ mile/ year (4.5 miles): \$ 3,000,000
- AWWA Goal = 0.3 break per mile per year



Questions

- Thank You



CT4 Fuel Nozzle Refurbishment

9/16/2020



Dong Quach & Chad Newbill

Key Topics

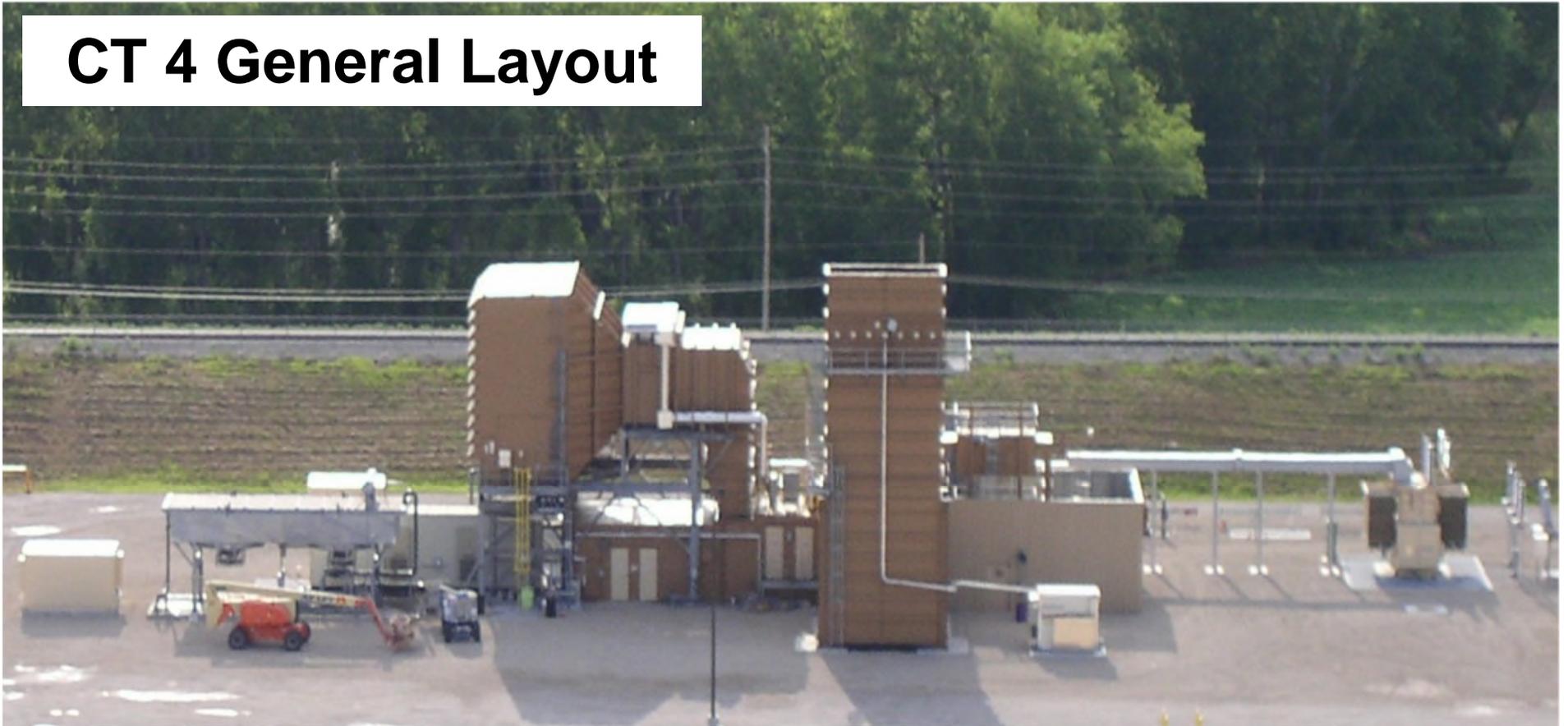
- Combustion Turbine Basics
- CT4 Combustion Section
- Combustion Problems
- Root Causes
- Solutions

Combustion Turbine Basics

- What is a Combustion Turbine?
 - Similar to a jet engine; much larger
 - Shaft connects to a generator to make power
- CT4 is a General Electric (GE) 7EA with a Dual Fuel Dry Low NO_x (DLN) 1 Combustion System

Combustion Turbine Basics

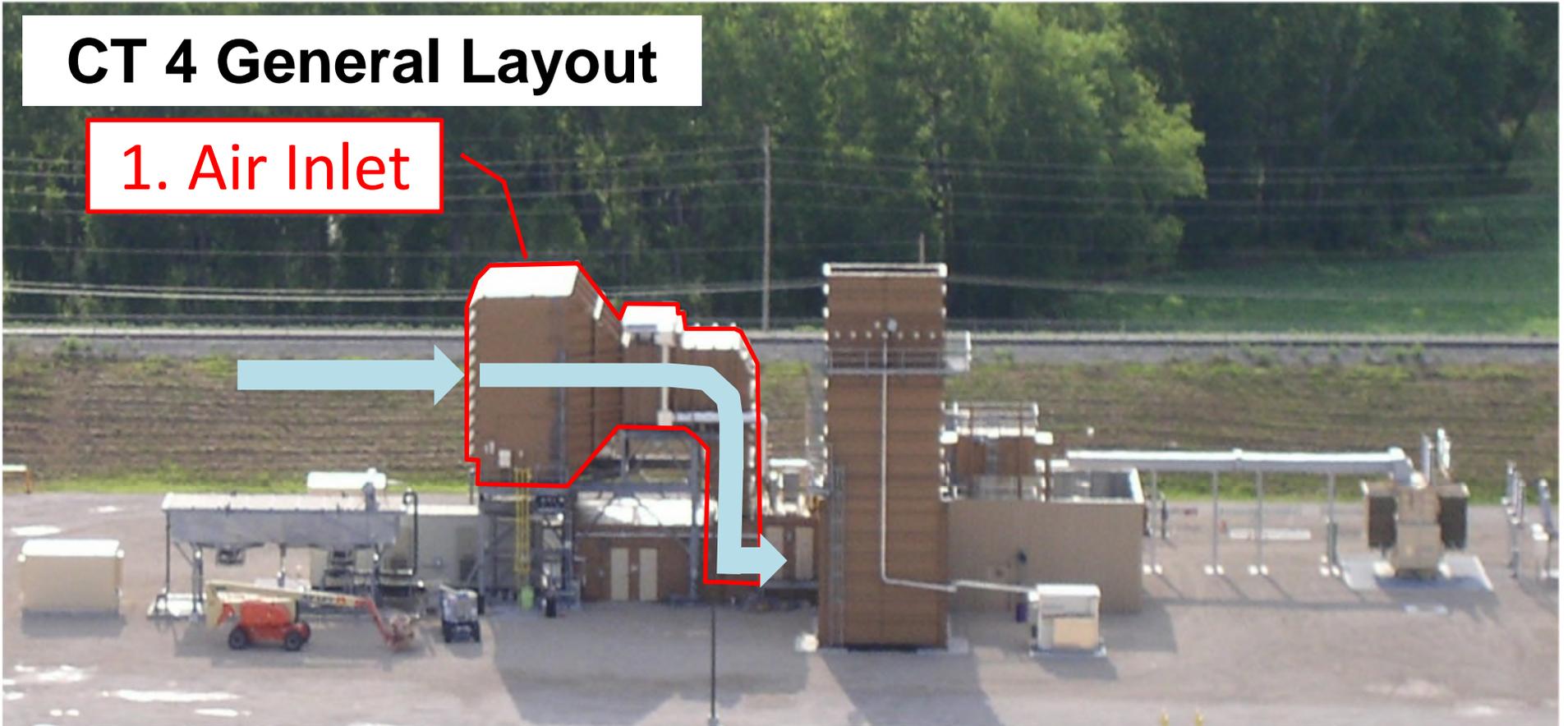
CT 4 General Layout



Combustion Turbine Basics

CT 4 General Layout

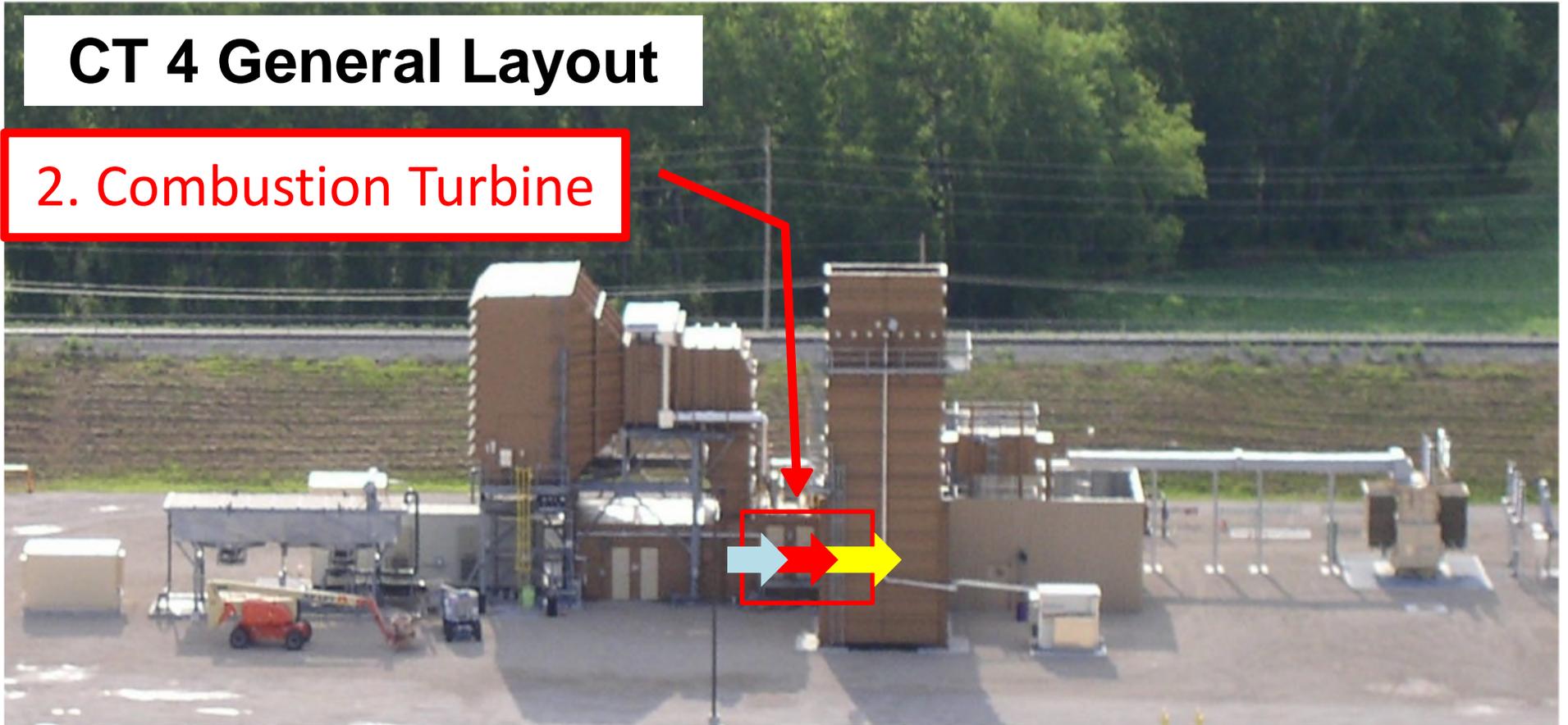
1. Air Inlet



Combustion Turbine Basics

CT 4 General Layout

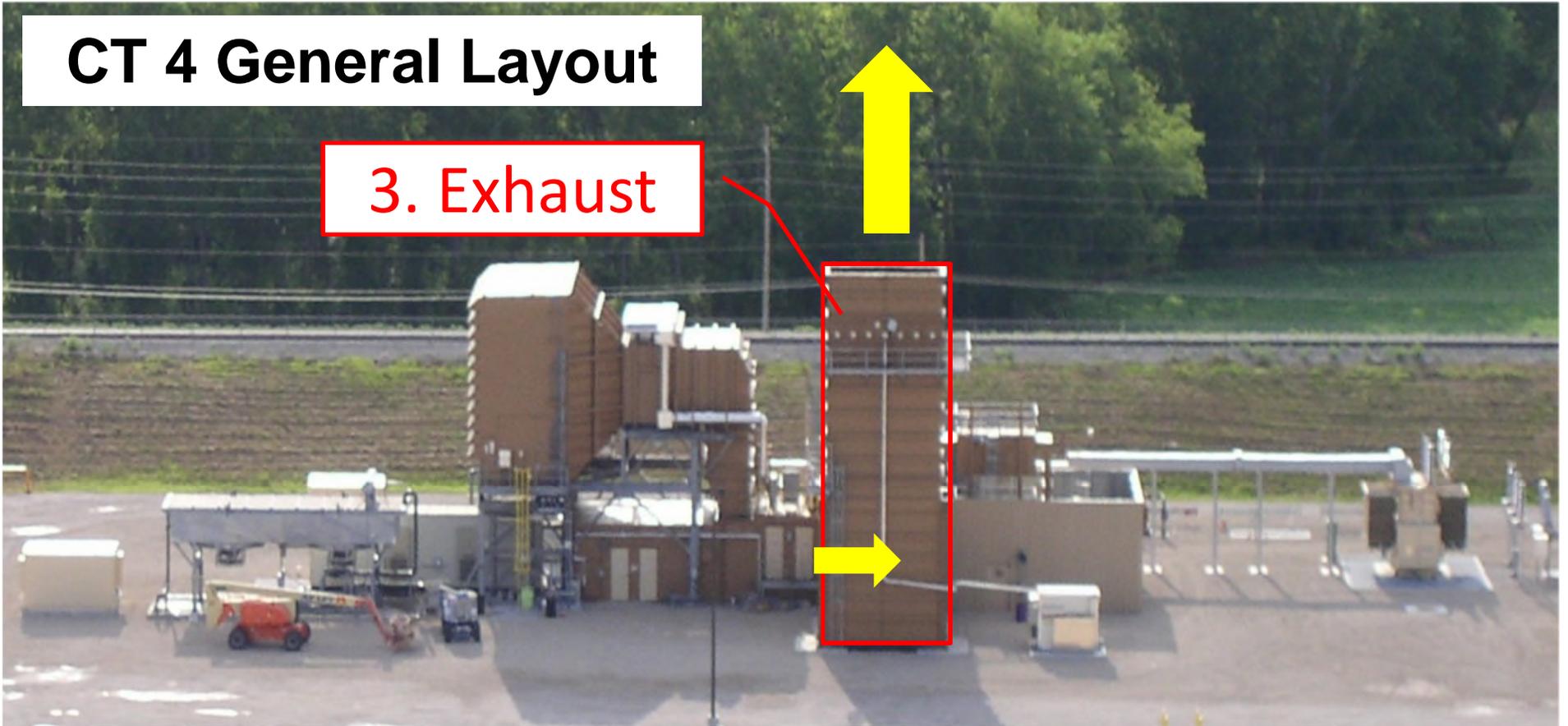
2. Combustion Turbine



Combustion Turbine Basics

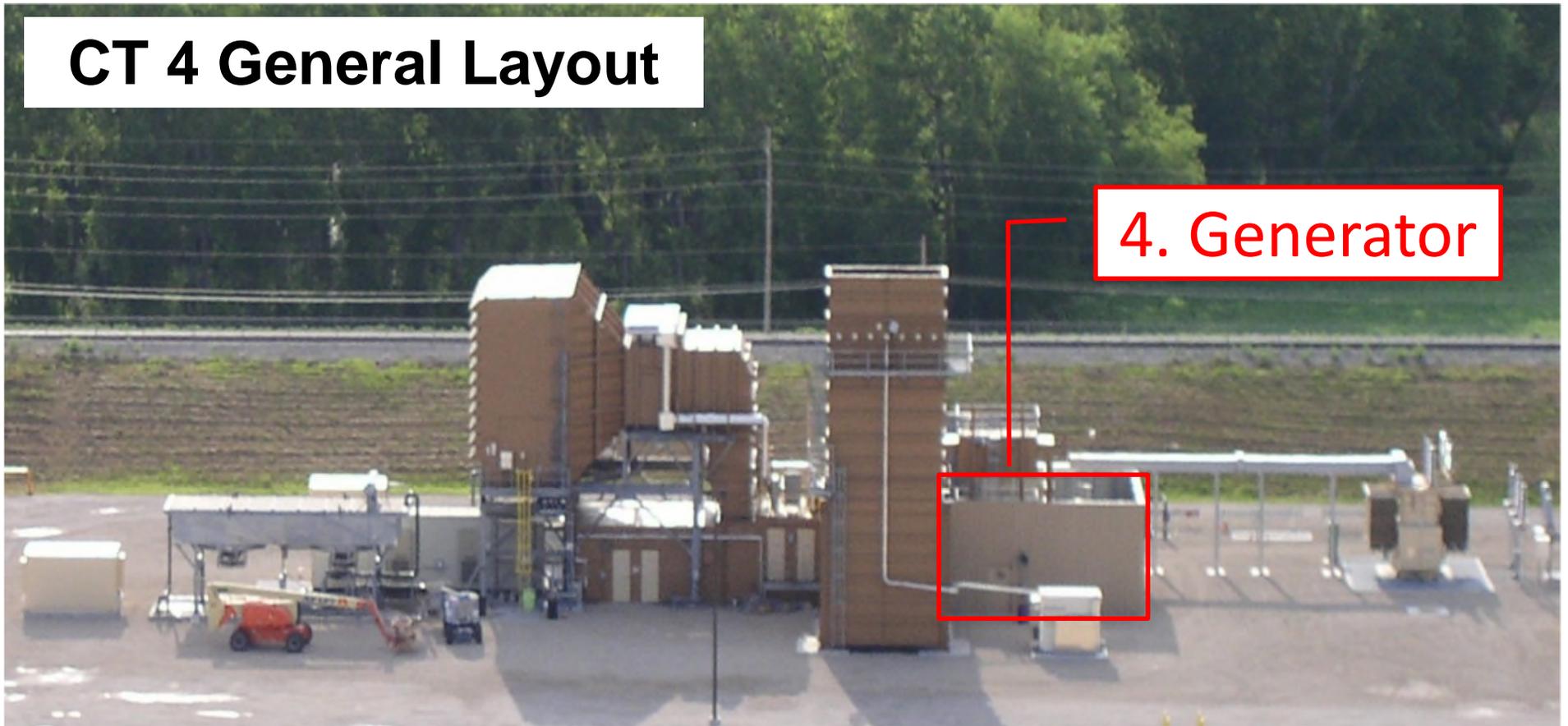
CT 4 General Layout

3. Exhaust

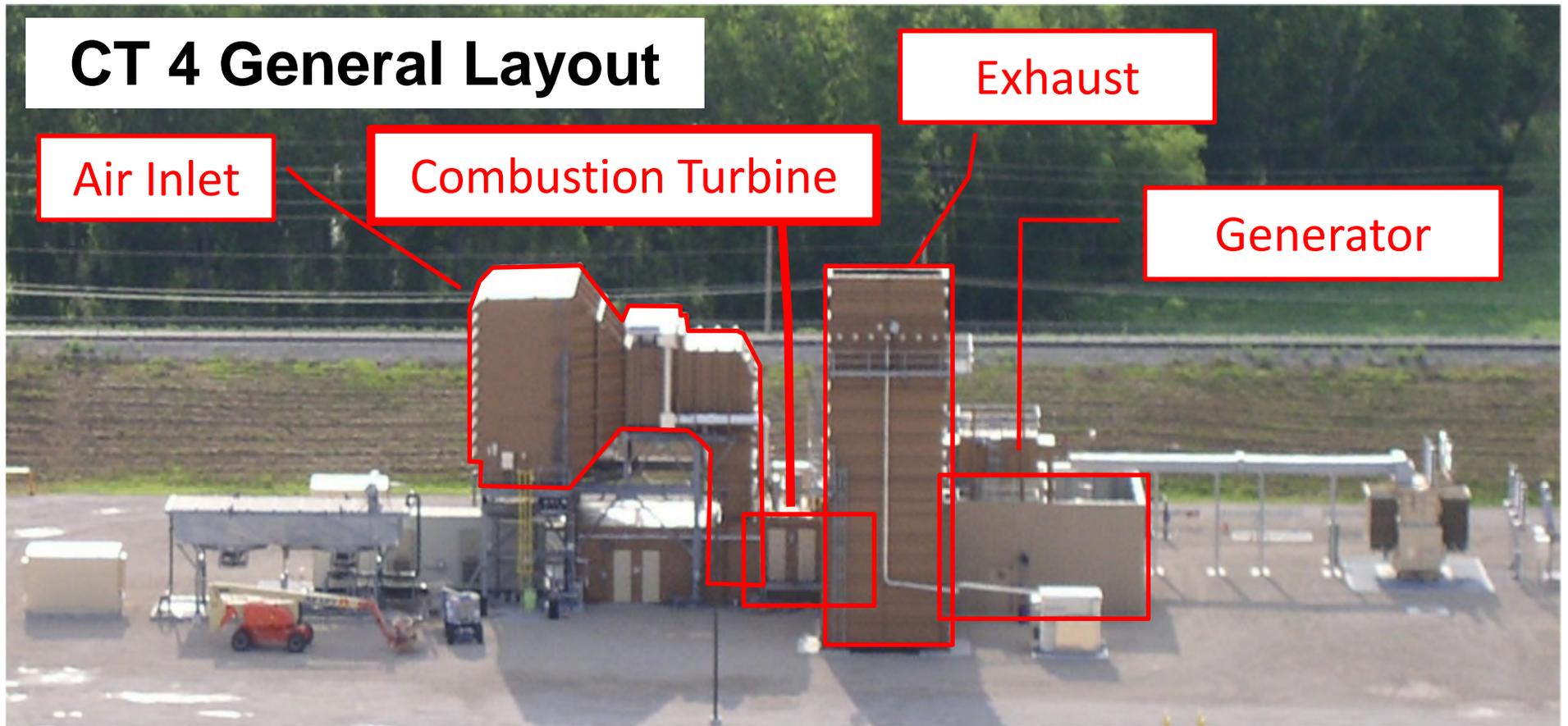


Combustion Turbine Basics

CT 4 General Layout

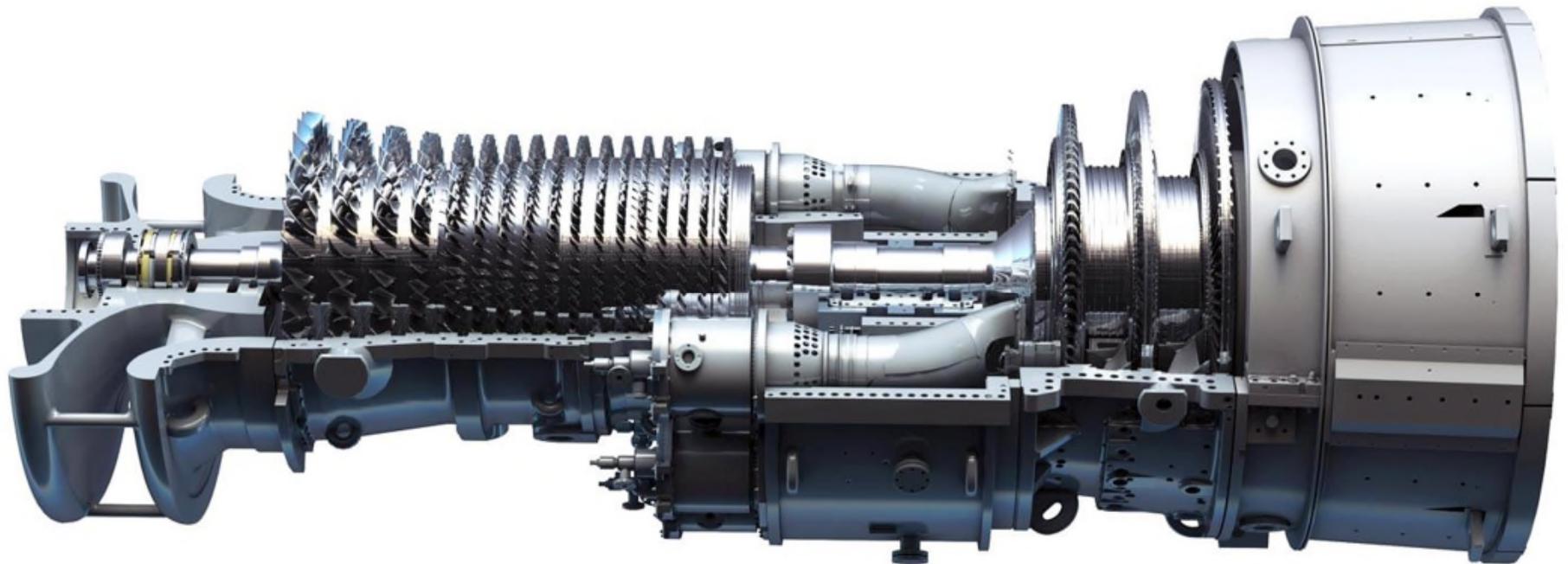


Combustion Turbine Basics



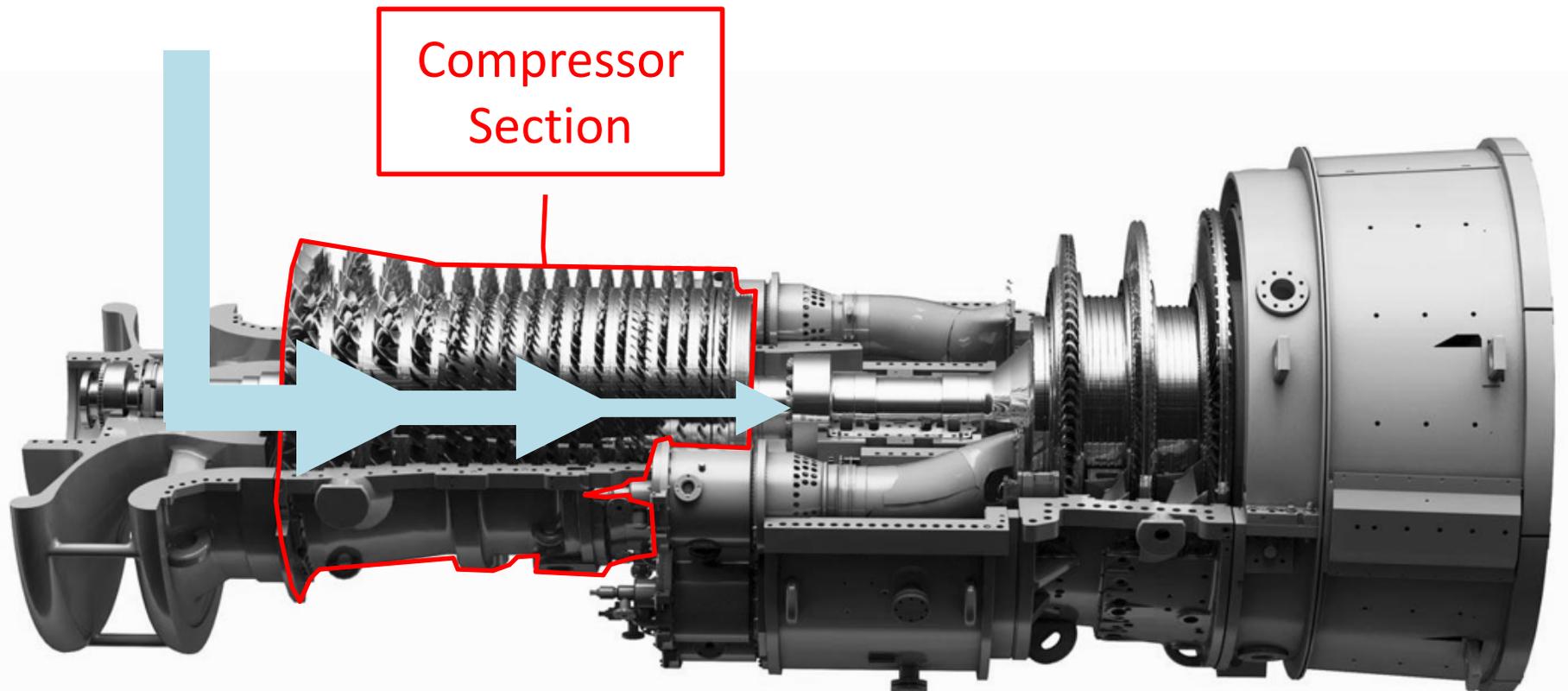
Combustion Turbine Basics

GE 7EA Combustion Turbine



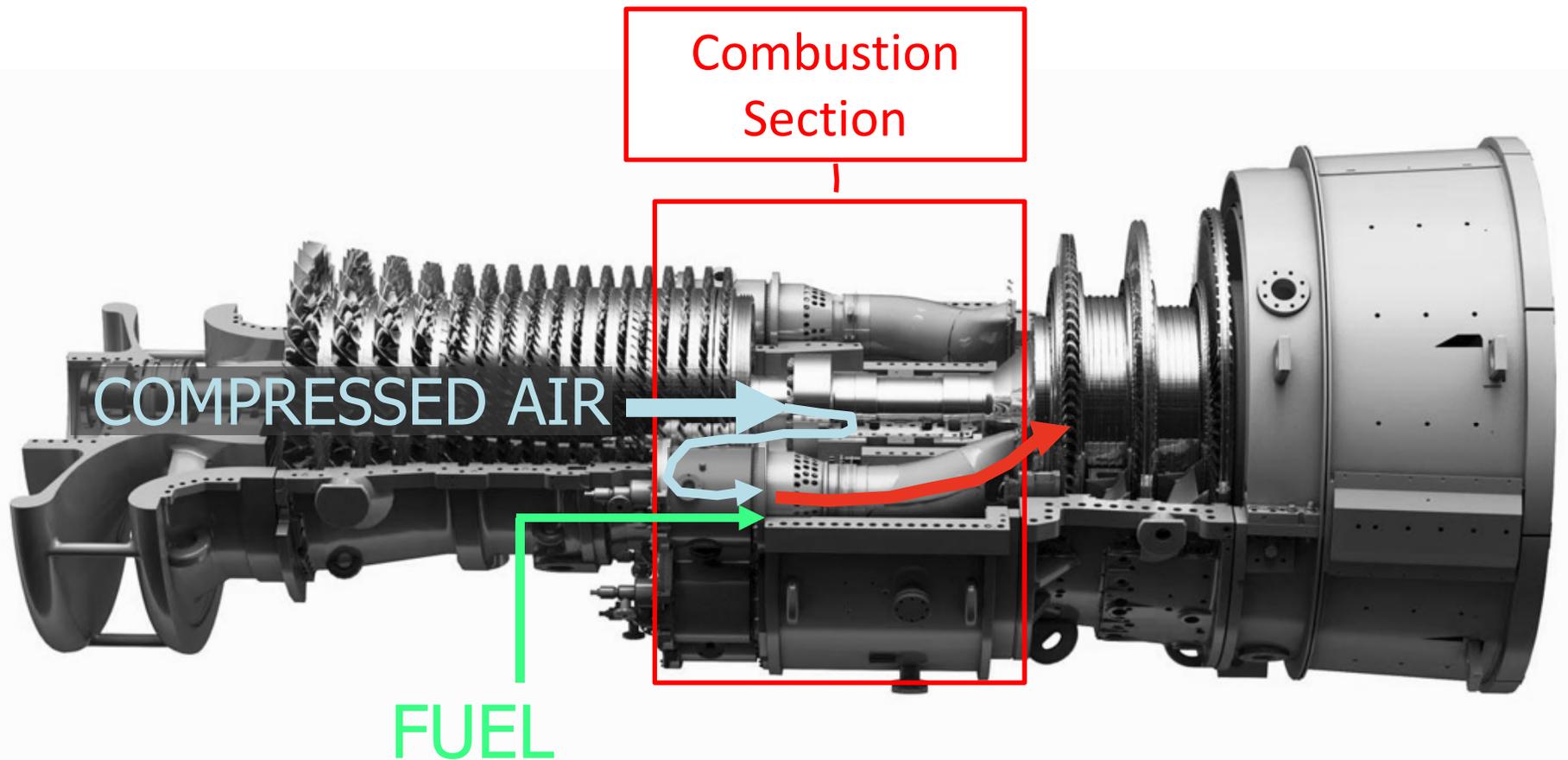
Combustion Turbine Basics

GE 7EA Combustion Turbine



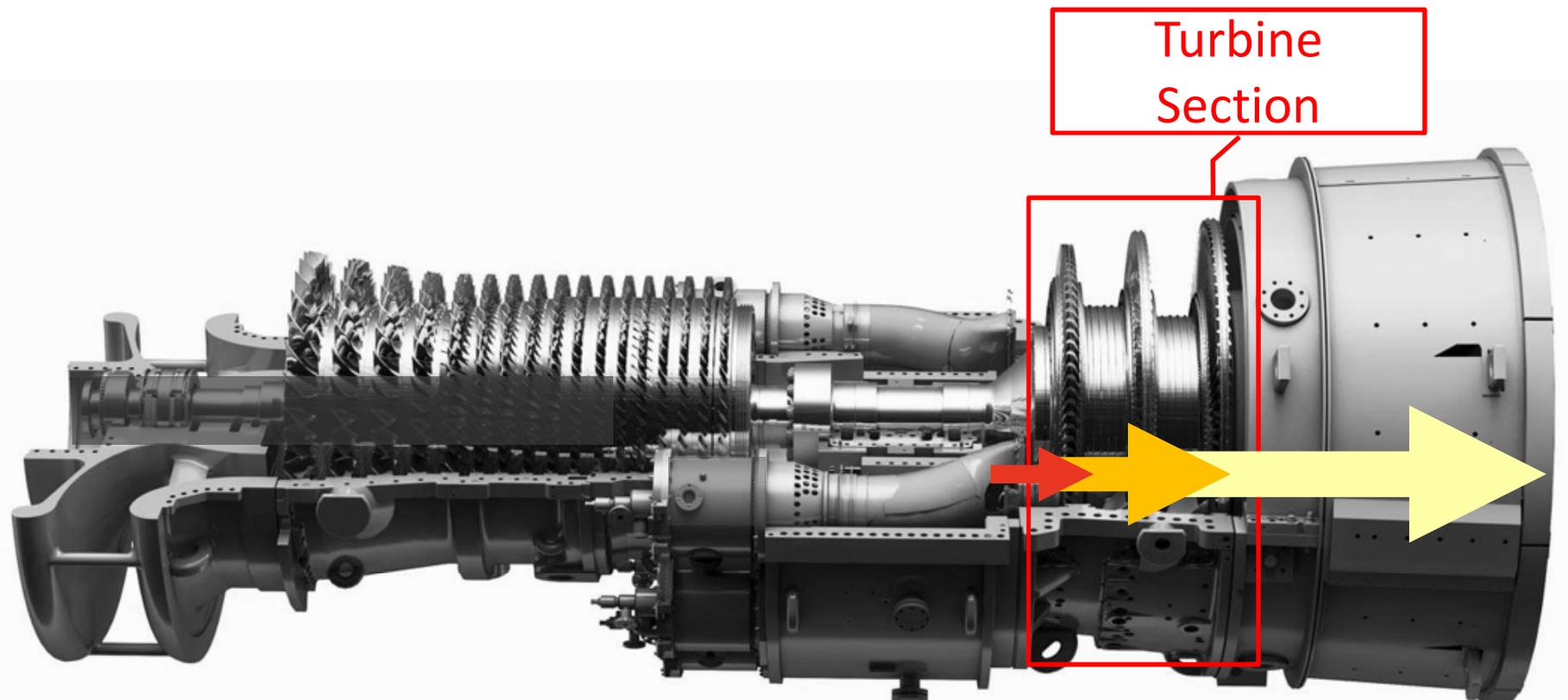
Combustion Turbine Basics

GE 7EA Combustion Turbine



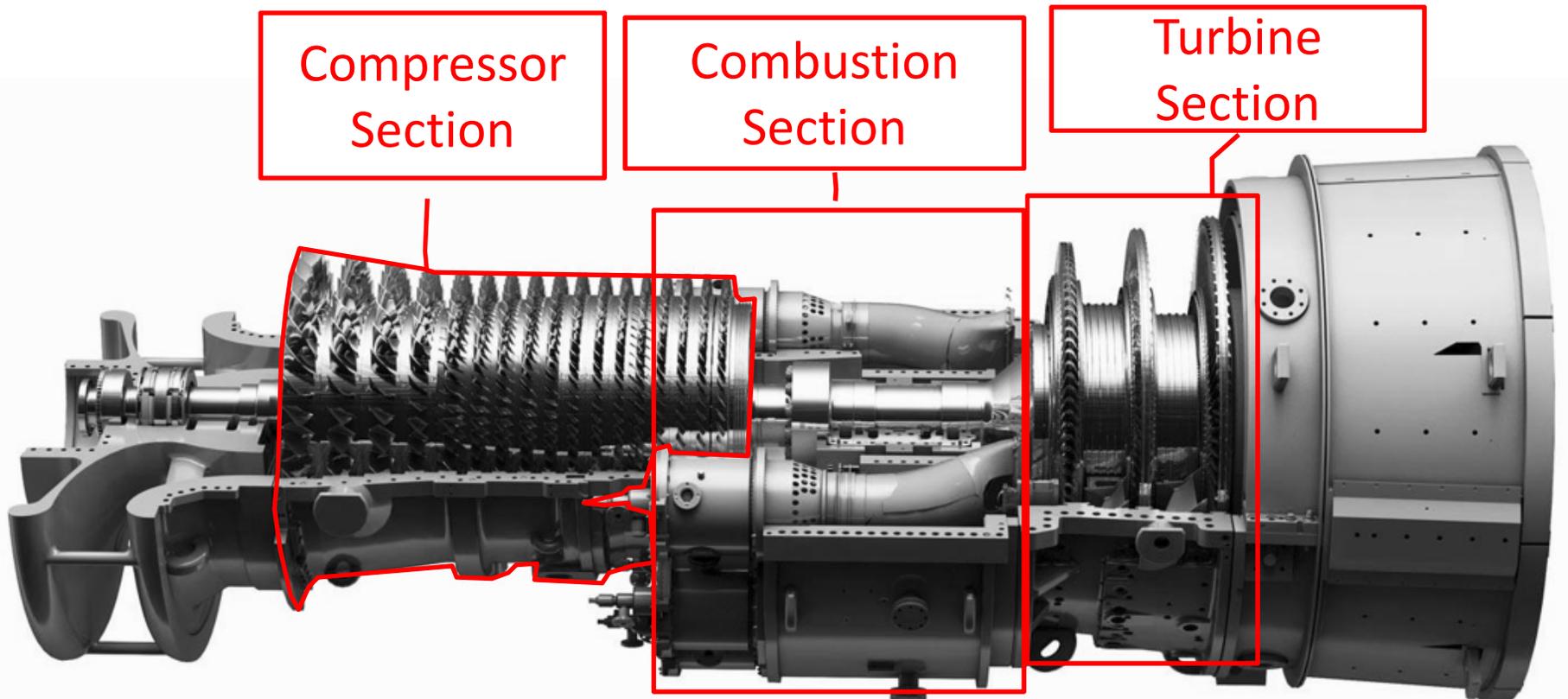
Combustion Turbine Basics

GE 7EA Combustion Turbine



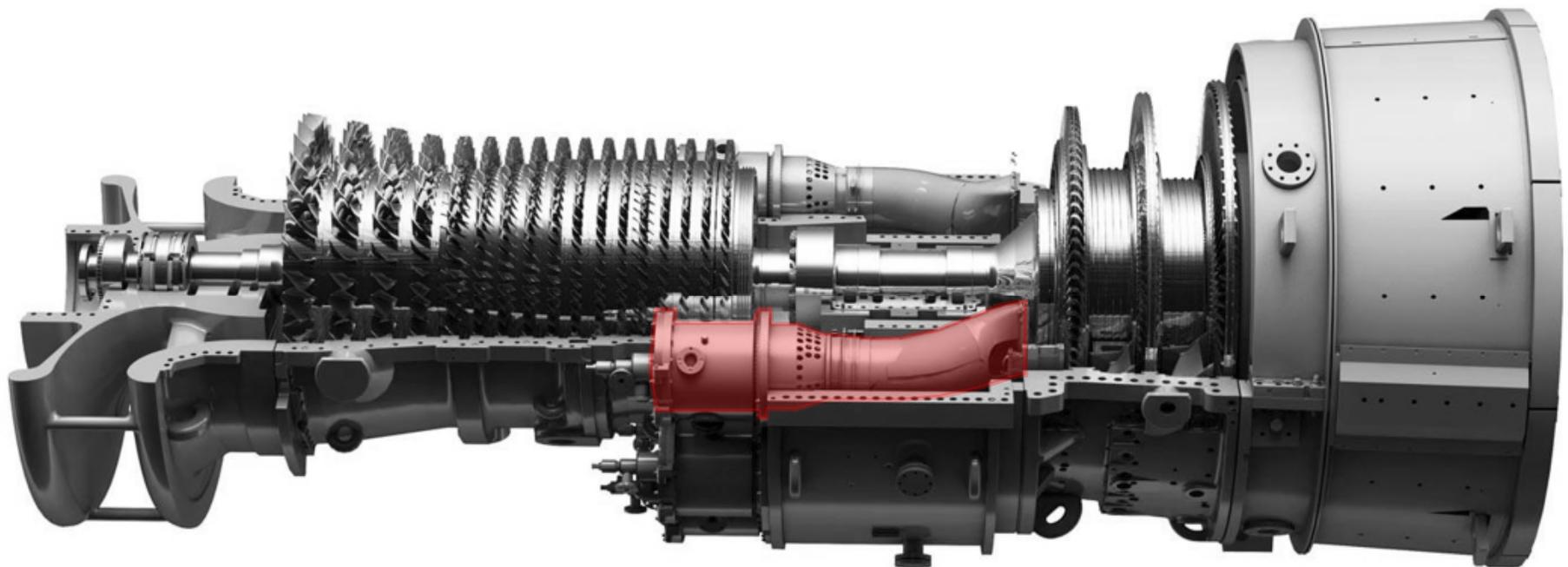
Combustion Turbine Basics

GE 7EA Combustion Turbine



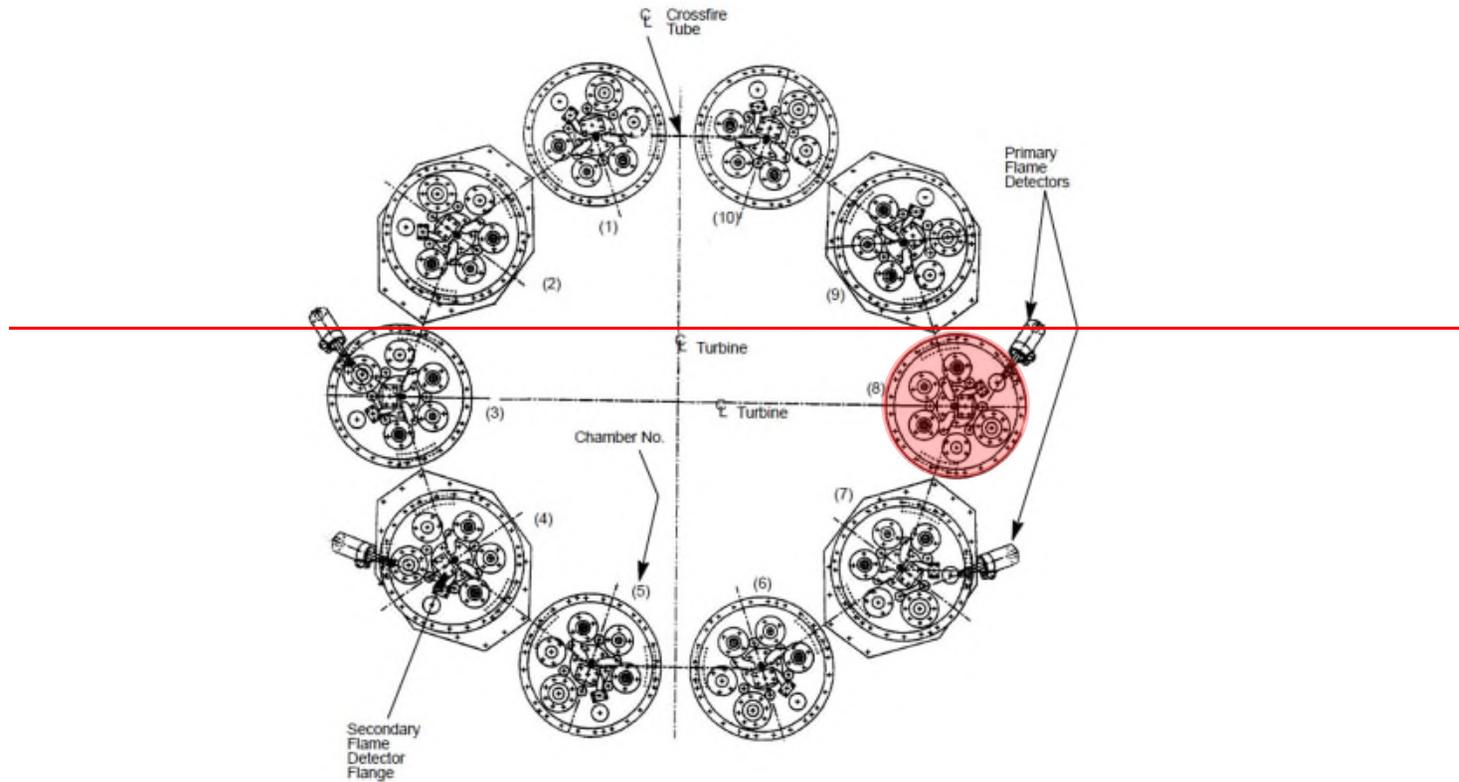
Combustion Turbine Basics

GE 7EA Combustion Turbine



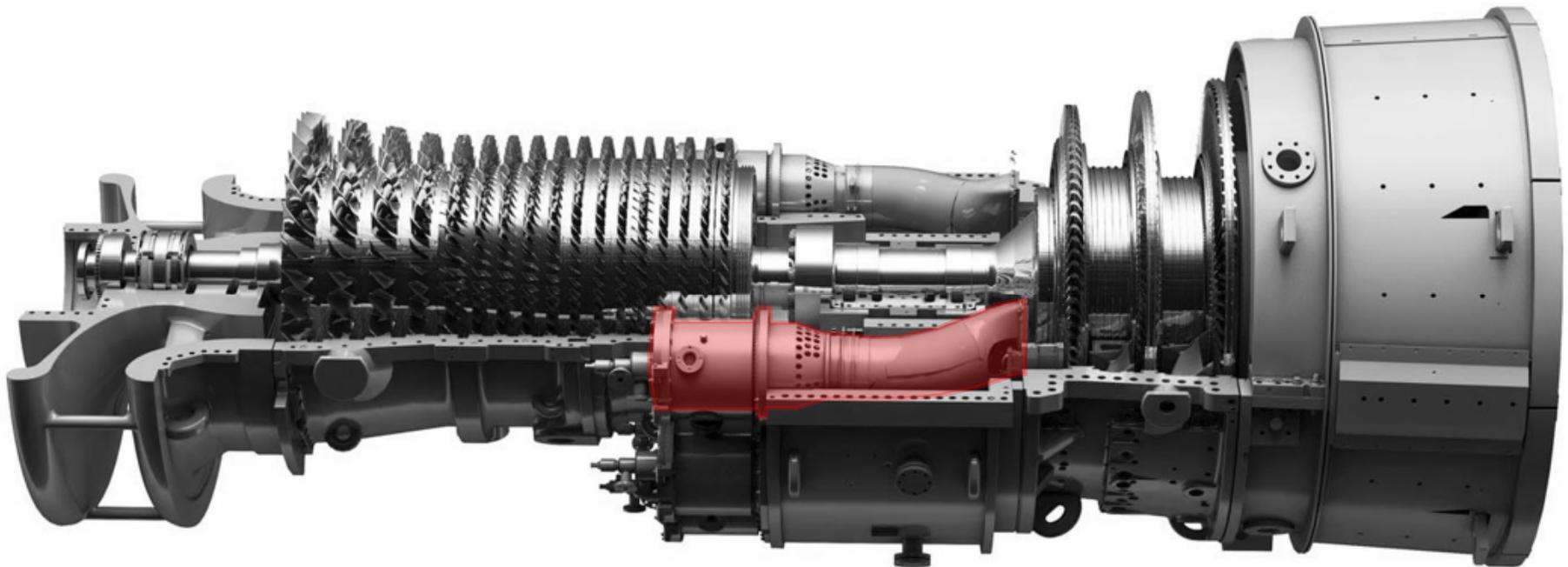
CT 4 Combustion Section

CT4 DLN 1 Dual Fuel



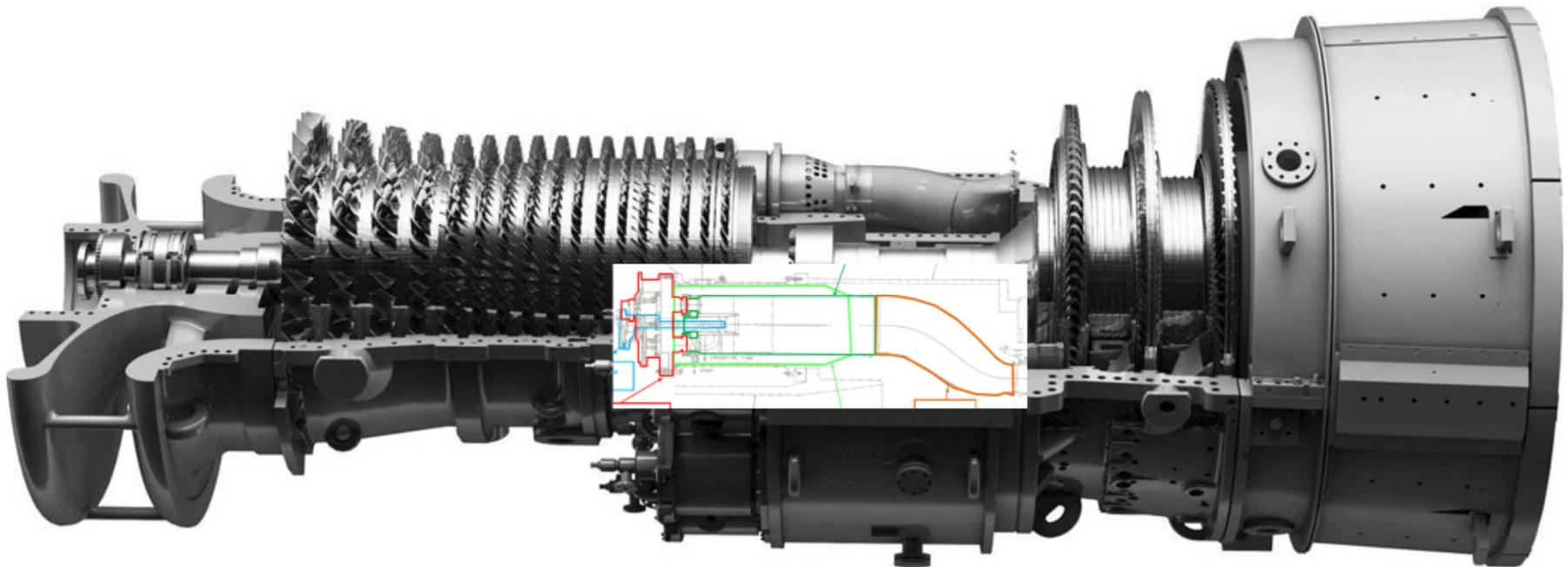
CT 4 Combustion Section

GE 7EA Combustion Turbine



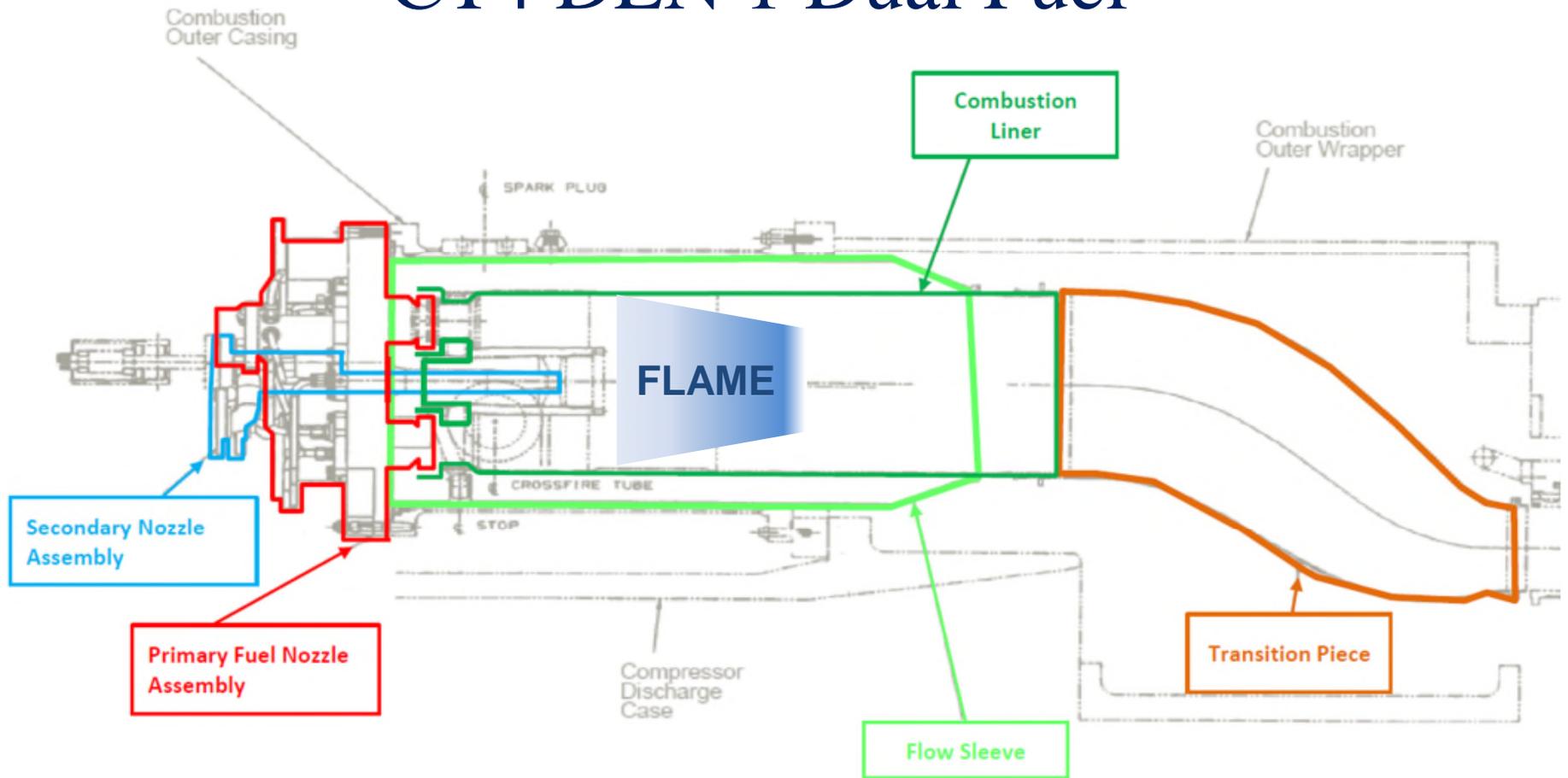
CT 4 Combustion Section

CT4 DLN 1 Dual Fuel



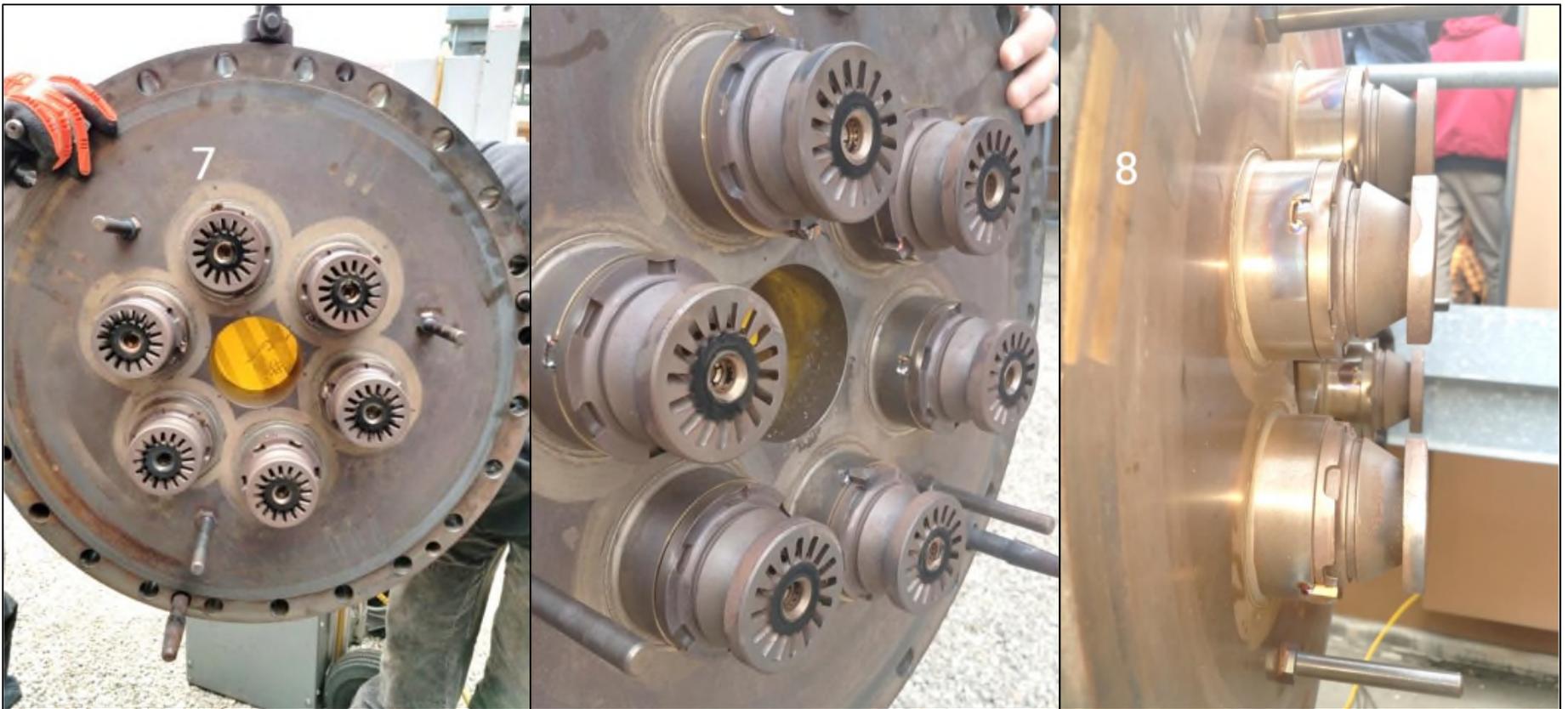
CT 4 Combustion Section

CT4 DLN 1 Dual Fuel



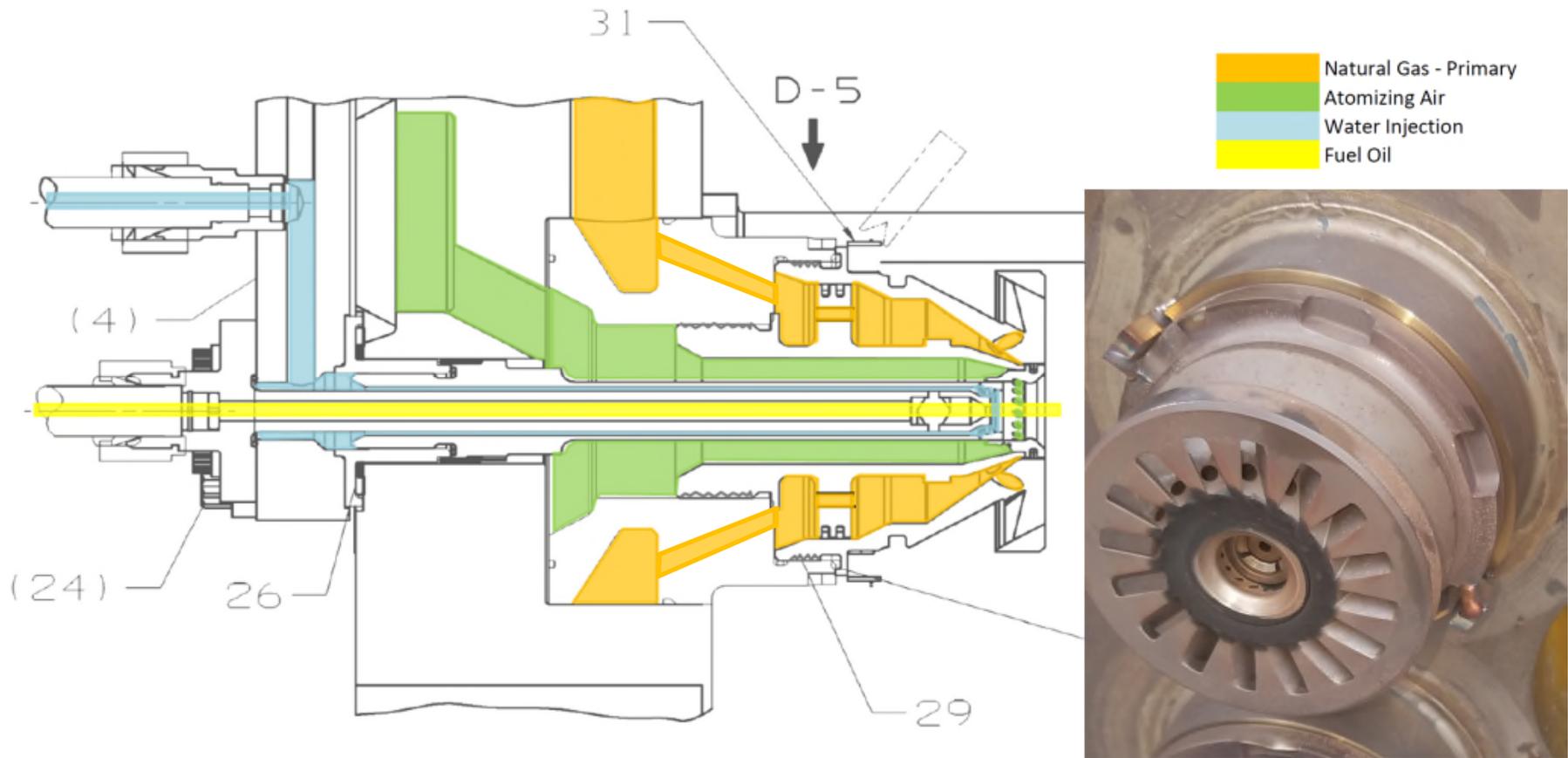
CT 4 Combustion Section

Primary Fuel Nozzles



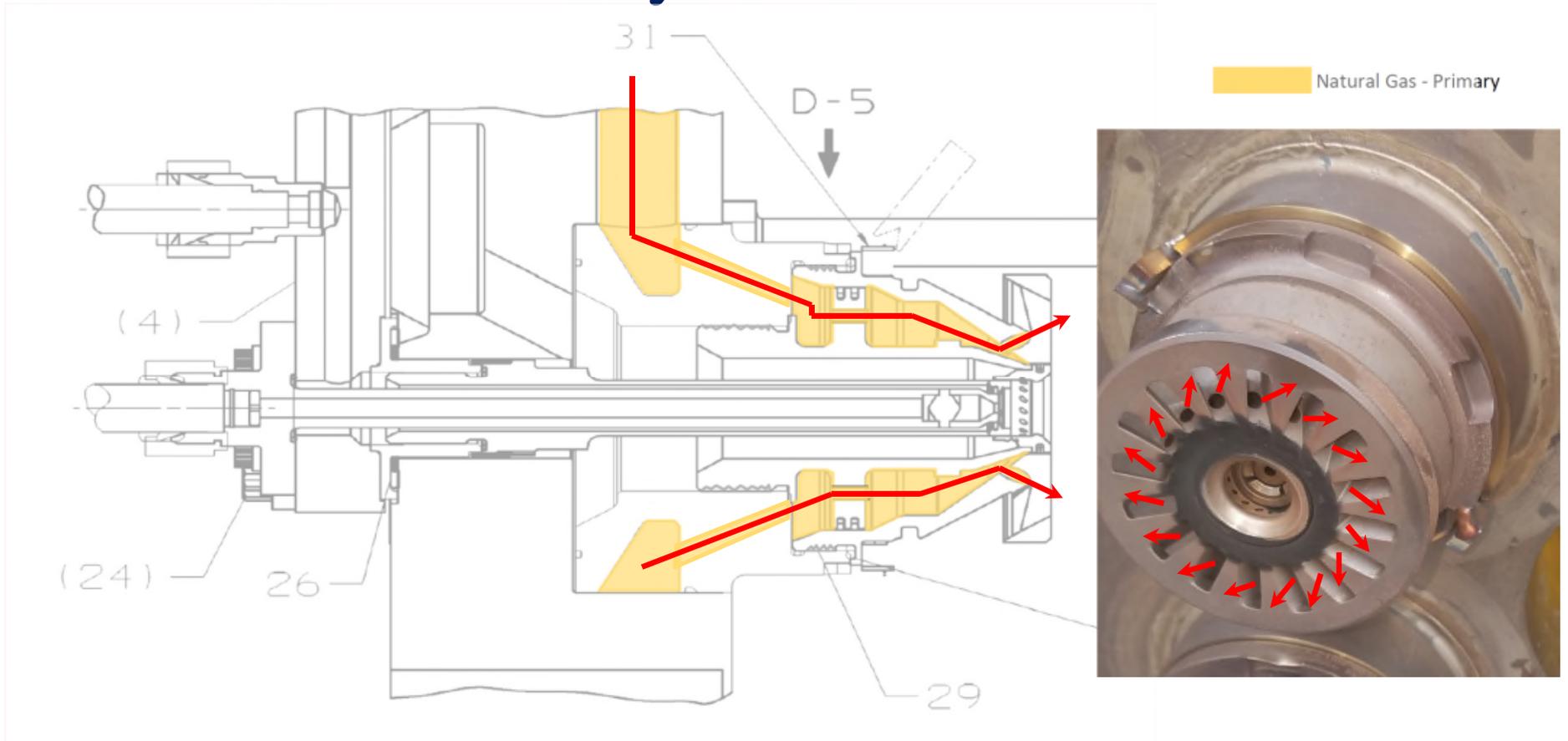
CT 4 Combustion Section

Primary Fuel Nozzles



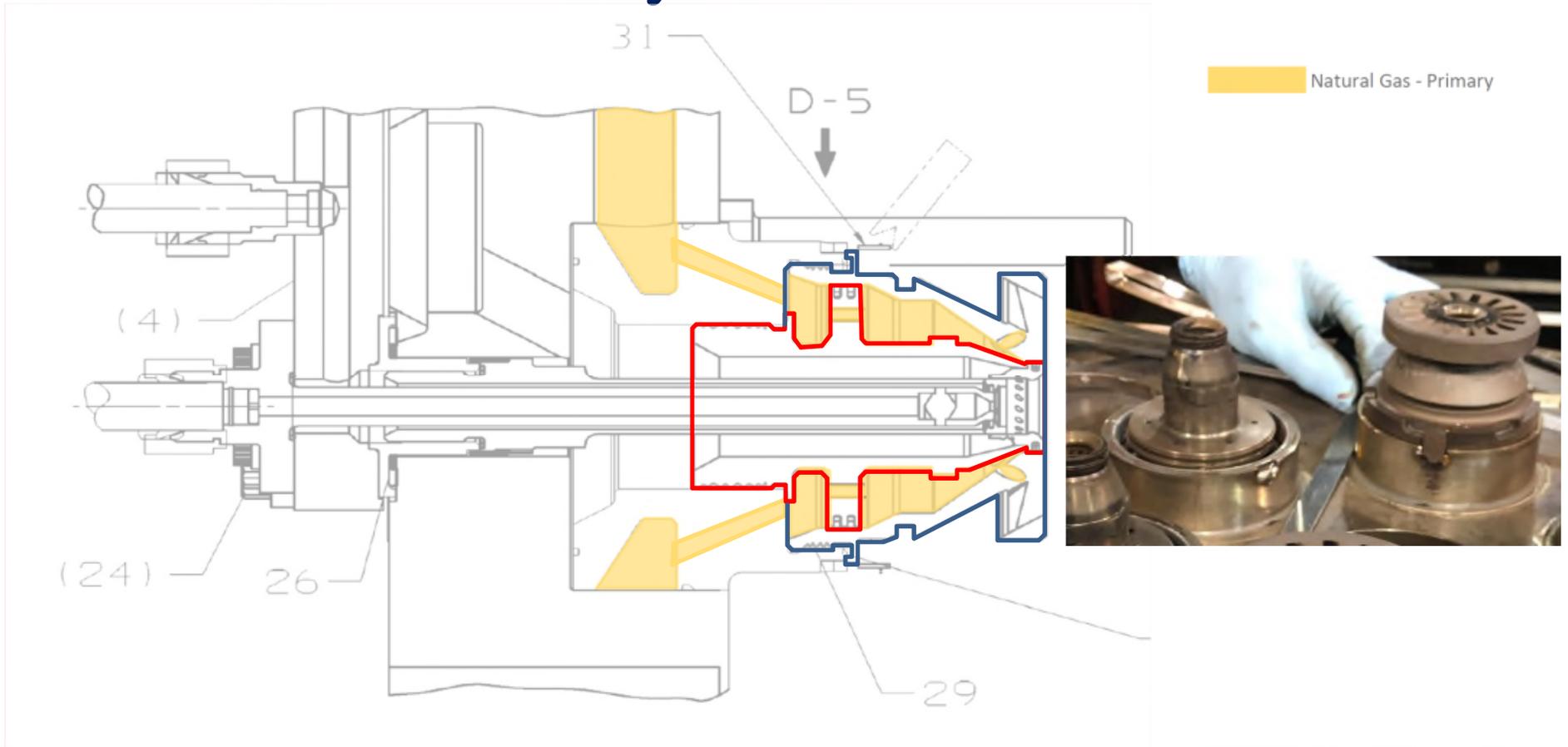
CT 4 Combustion Section

Primary Fuel Nozzles



CT 4 Combustion Section

Primary Fuel Nozzles



CT 4 Combustion Section

Primary Fuel Nozzles



CT 4 Combustion Section

Primary Fuel Nozzles





CT 4 Combustion Problems

- Fall 2015 – CT4 Combustion Inspection
 - Normal maintenance inspection
- Fall 2017 – Began to see CT4 Emissions problems
- Fall 2018 – CT4 Fuel Nozzle Refurbishment
 - Inspection & repairs to address CT4 Emissions problems
- Fall 2018 – Notified from GE that a fleet-wide Root Cause Analysis (RCA) for 7EA Fleet Fuel Nozzle Problems was underway.
- Fall 2019 – CT4 Fuel Nozzle Refurbishment
 - Inspection & repairs to incorporate corrections to GE Shop methods found from GE RCA

CT 4 Combustion Problems

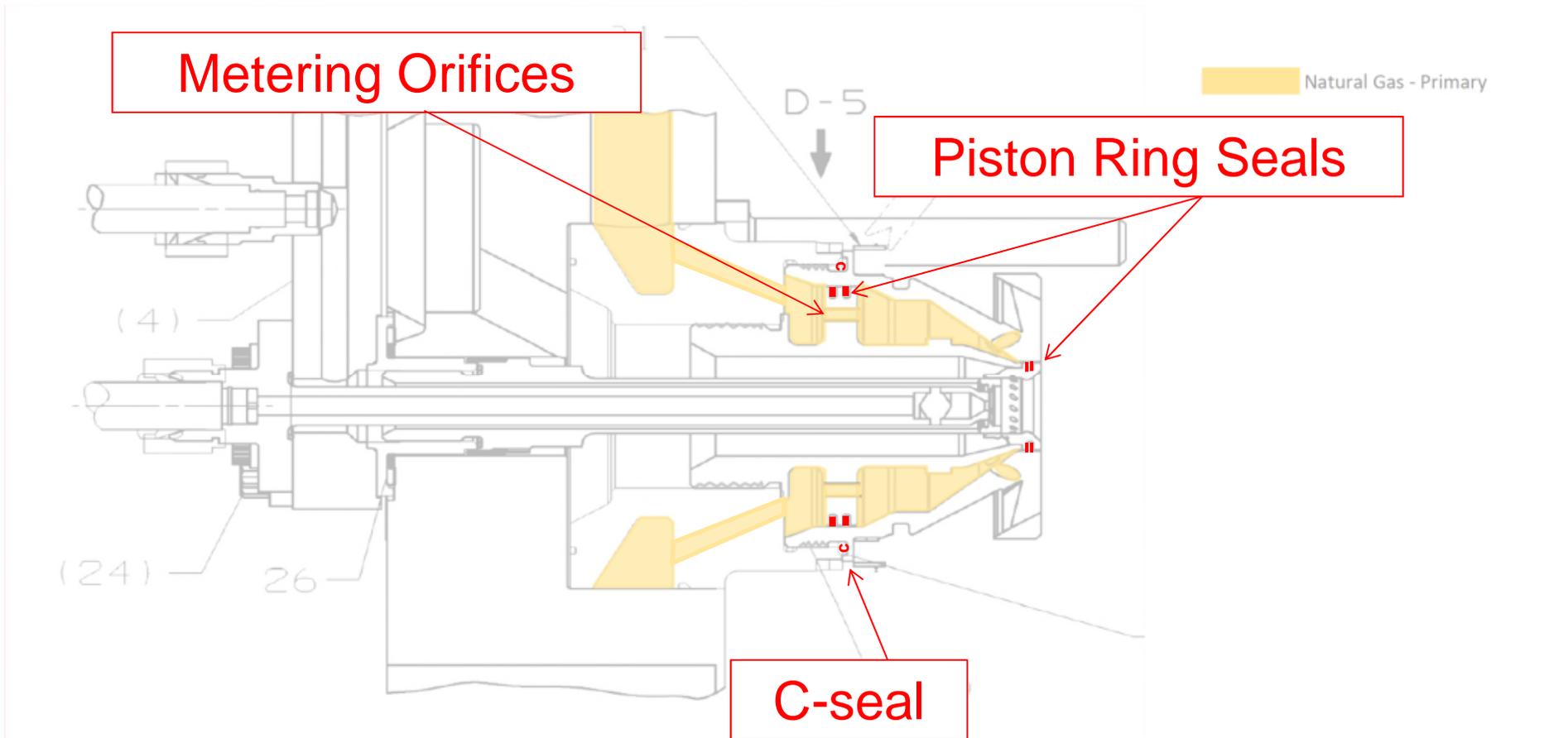
- Combustion Issues
 - NO_x was running ~ 1ppm higher than normal. In cooler weather, there is very little margin under our limit.
 - Exhaust Temperature Spreads were running ~40°F higher than normal; ~110°F vs ~70°F.

Root Causes

1. Primary Fuel Nozzle C-Seals Overcrushed
2. Primary Fuel Nozzle Metering Orifice Chamfers

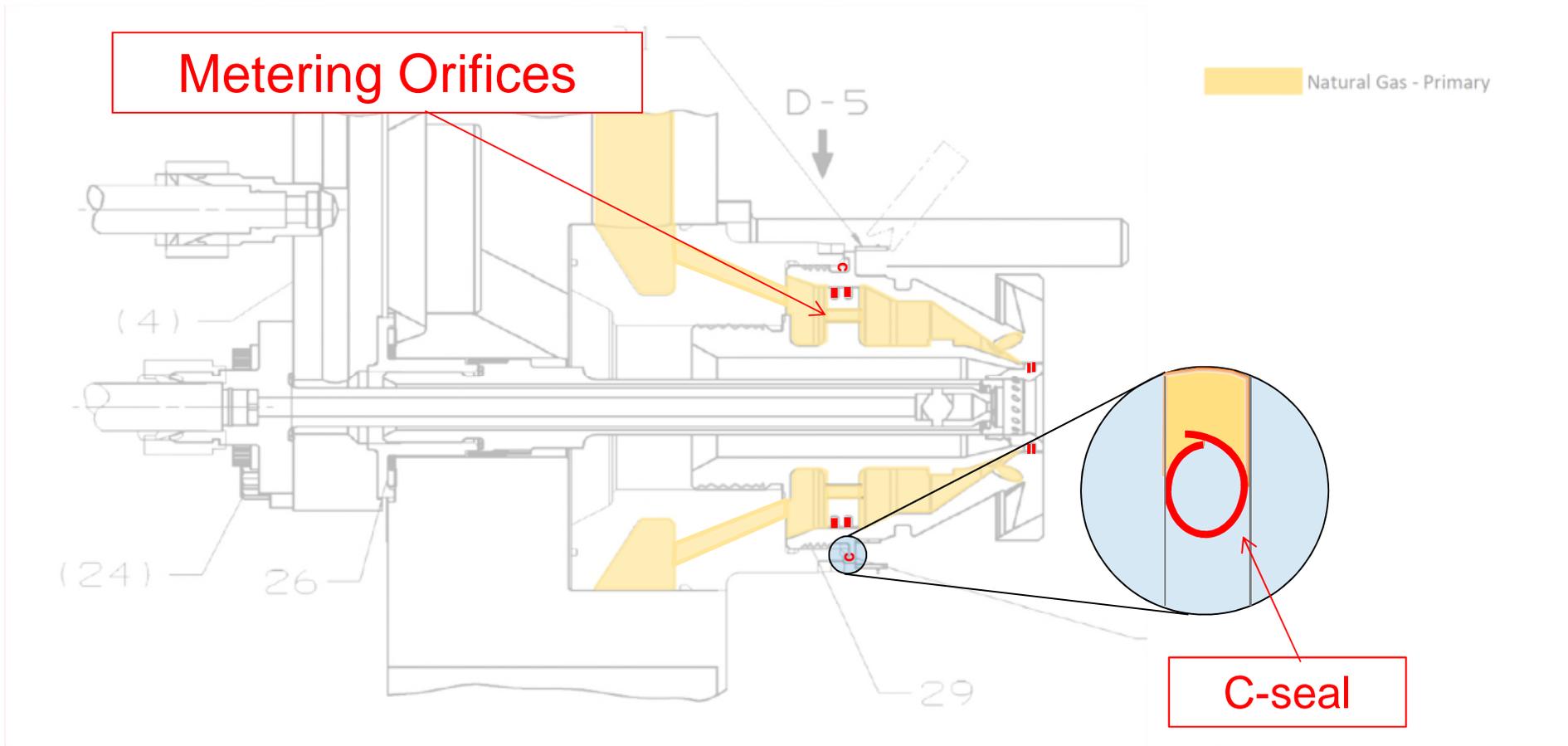
Root Causes

1. Primary Fuel Nozzle C-Seals Overcrushed



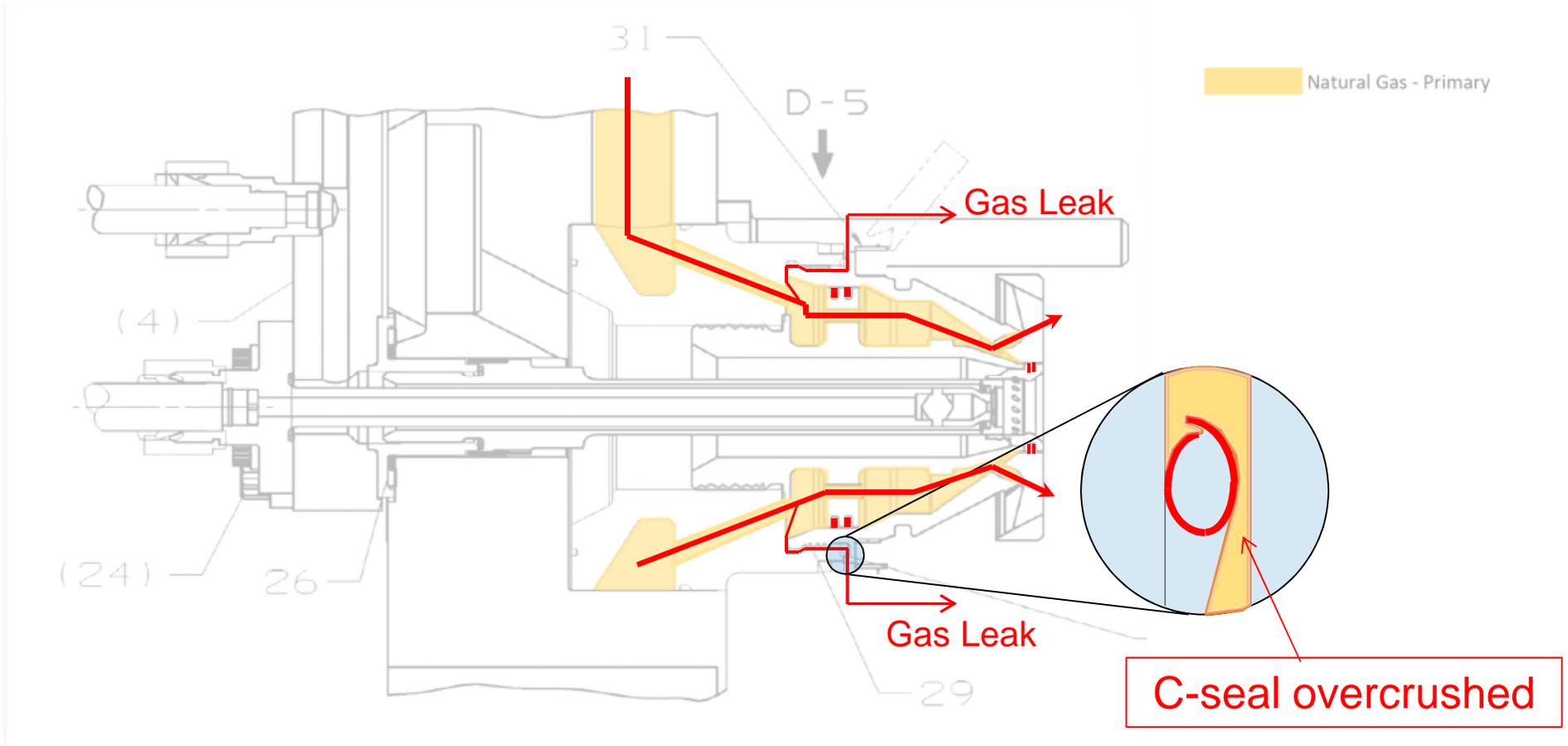
Root Causes

1. Primary Fuel Nozzle C-Seals Overcrushed



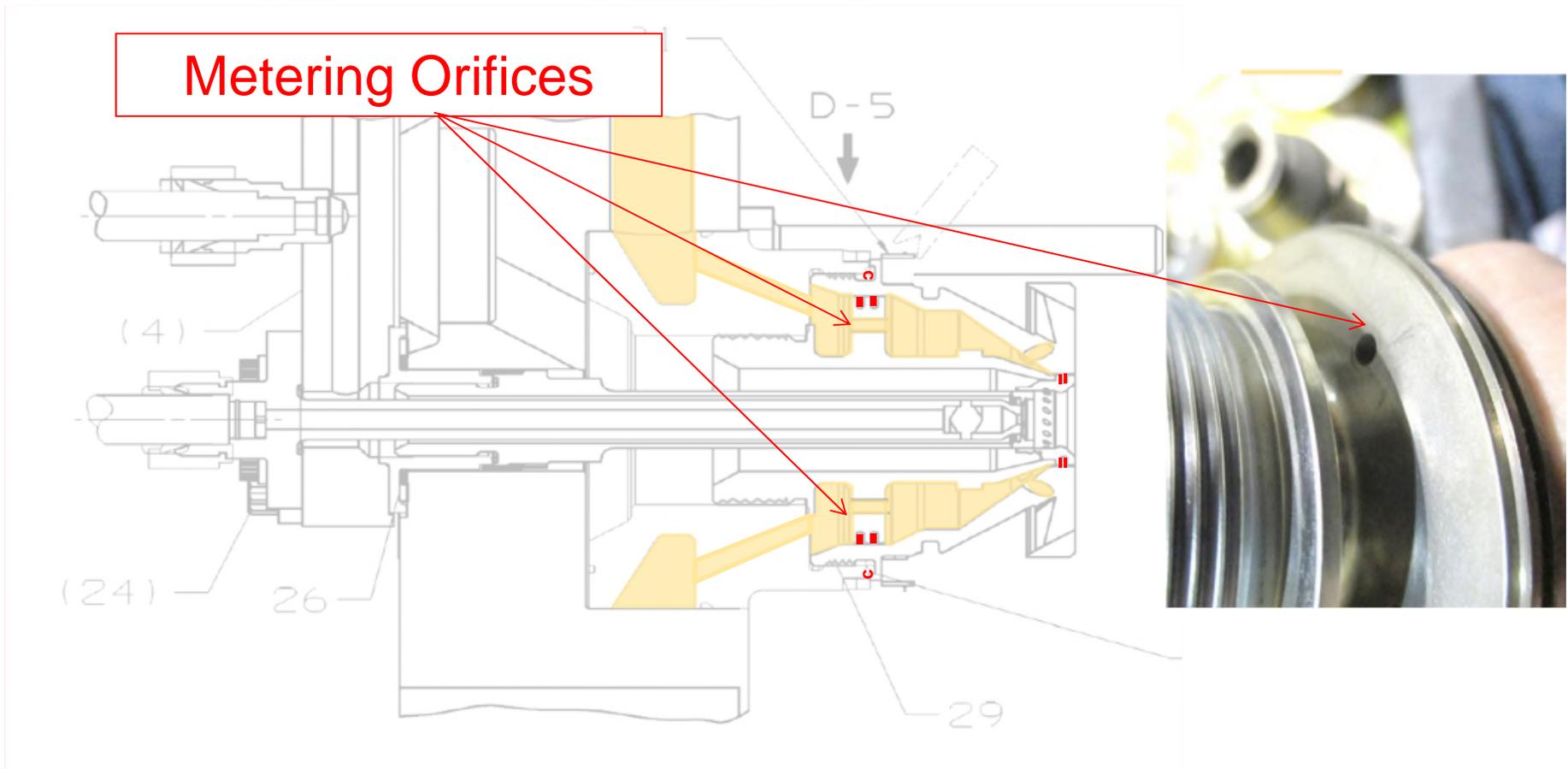
Root Causes

1. Primary Fuel Nozzle C-Seals Overcrushed



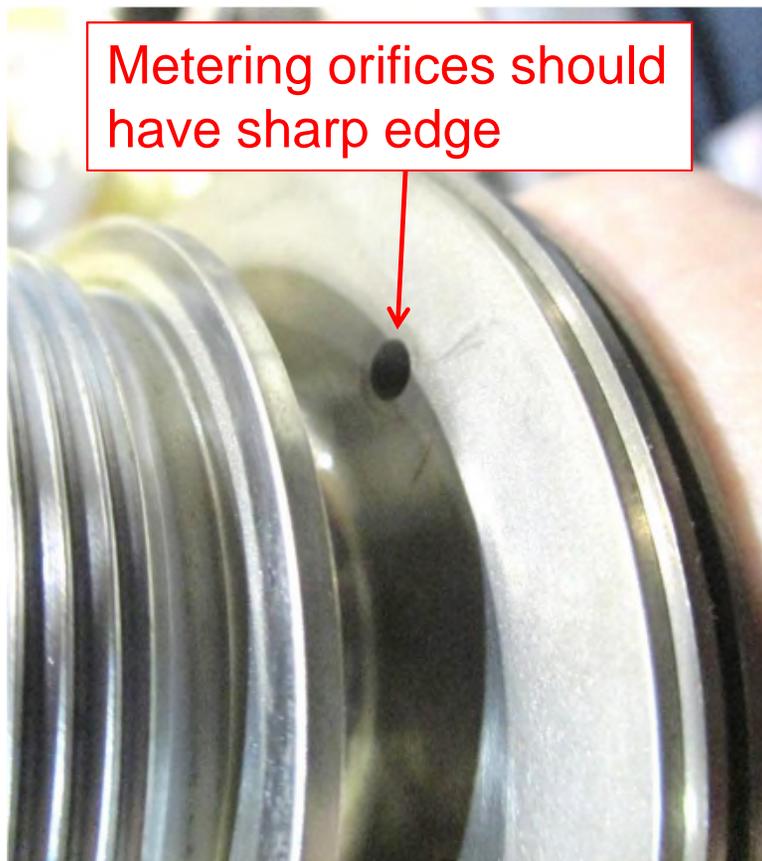
Root Causes

2. Primary Fuel Nozzle Metering Orifice Damage



Root Causes

2. Primary Fuel Nozzle Metering Orifice Damage



Solutions

1. Primary Fuel Nozzle C-Seals
Overcrushed – GE Shop changed the outer tip torque procedures resulting in more consistent crush of the C-Seal.
2. Primary Fuel Nozzle Metering Orifice Chamfers – GE shop no longer chamfers metering orifices for flow adjustment. All existing chamfers were repaired.

Q/A