

RYPOS TRAP

Active Diesel Emission Control System

FIELD DEMONSTRATIONS

Frank S. DePetrillo, C.O.O.
Zachary Nardi, Amin Saeid and Kevin Lubinsky
3 Industrial Park Road
Medway MA 02053
(508) 533-9655

Field Demonstrations

Objectives

- **Build and test engineering prototypes and demonstration units.**
- **Collect test data and get feedback to refine our design.**
- **Increase awareness of RYPOS TRAP**

Filter Cartridge



RYPOS TRAP: RT408C



WWW.RYPOS.COM

RYPOS TRAP: Advantages

- Unique Filter Media
- Direct Electric Heating
- Controlled Regeneration
- Smart (Automatic)
- Energy Efficient
- Reduces Soot and Smoke

Field Tests: February-August 2002

ICAT Program (Riverside, California)

- 100 kW Genset
- 225 kW Genset
- 350 kW Genset

Edwards AFB (California)

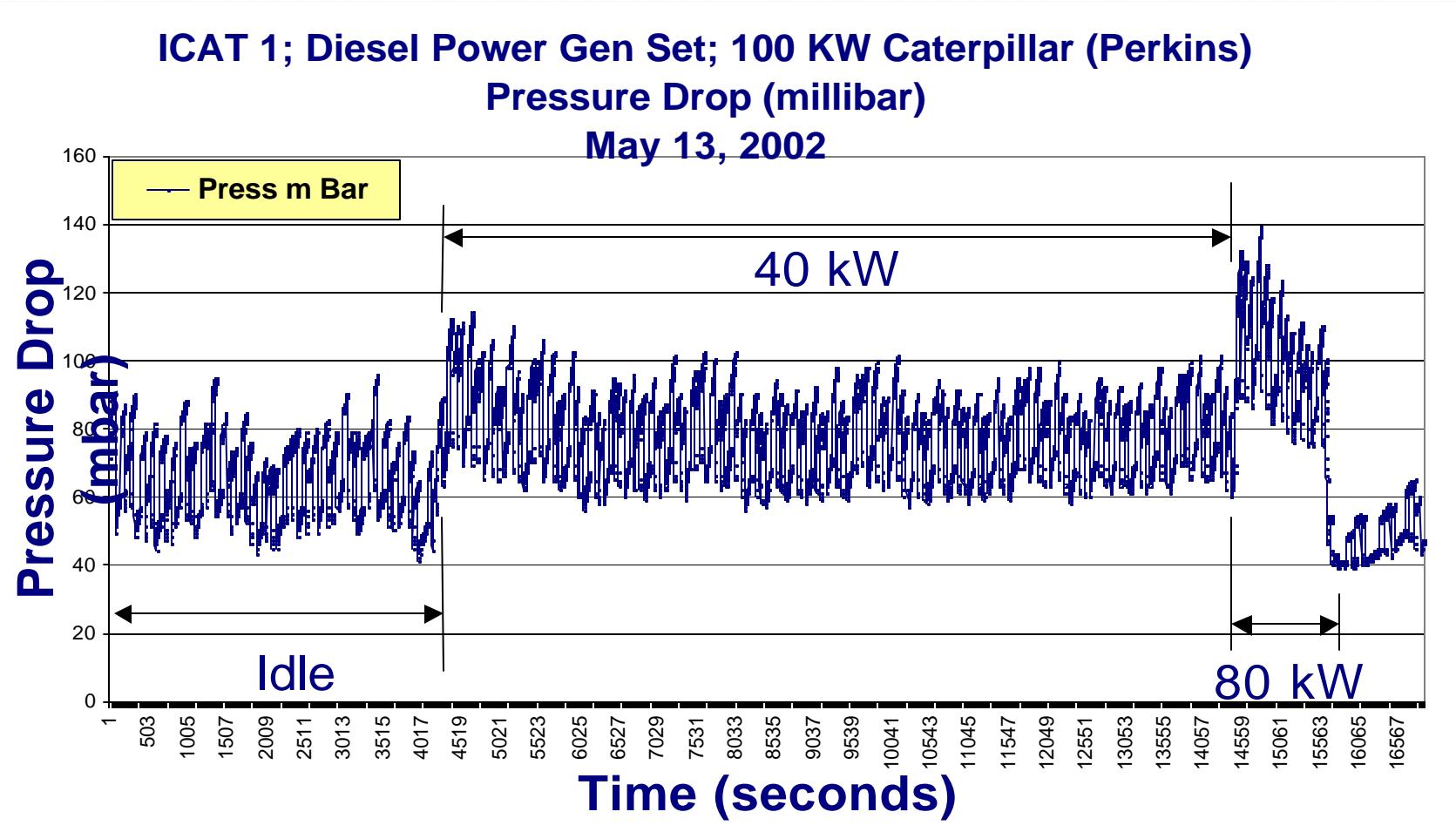
- Two 75kW Aircraft Ground Power Units

Road Grader (Riverside, California)

ICAT PROGRAM: 100kW Diesel Generator Riverside, California



ICAT PROGRAM: 100kW Diesel Generator Riverside, California



ICAT PROGRAM: Particulate Sampling

Particulate sampling

Particulate sampling was conducted by Rypos using some of the guidelines set by A.R.B. in “Method 5” for stationary engines.

Method highlights

- Tissue Quartz (no binder) sample filters
- Analytical balance 0.1mg sensitivity
- Positive displacement vacuum pump
- Non-diluted sampling train

ICAT PROGRAM: 100kW Diesel Generator Riverside, California

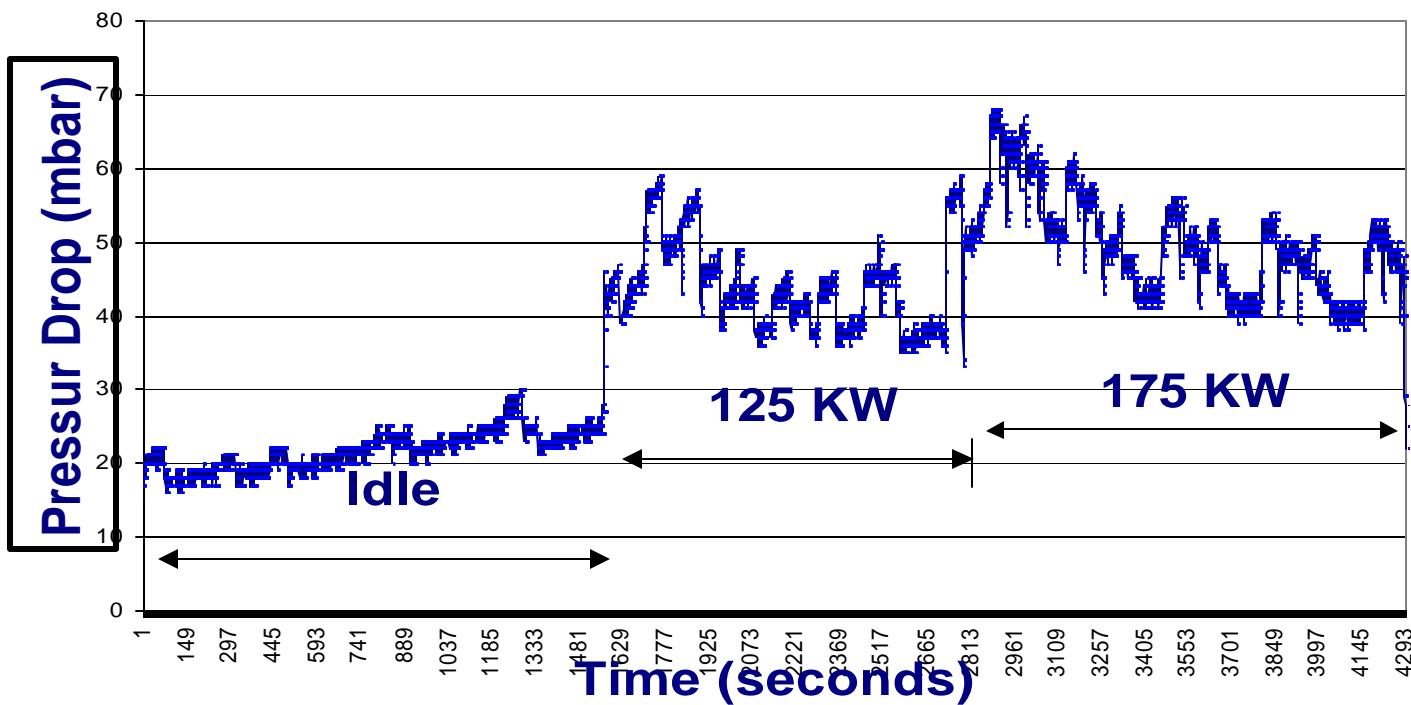
Load	Efficiency (TPM) Just after installation	Efficiency (TPM) Just before uninstallation
Idle	77%	78%
40 kW	70%	86%
80 kW	96%	89%

ICAT PROGRAM: 200kW Diesel Generator Riverside, California



ICAT PROGRAM: 200kW Diesel Generator Riverside, California

**ICAT 2; 200 KW Power Gen Set - Caterpillar
Diesel Engine
May 17, 2002**



ICAT PROGRAM: 200kW Diesel Generator

Riverside, California

Load	Efficiency (TPM) Just after installation	Efficiency (TPM) Just before uninstallation
Idle	52%	85%
125 kW	95%	86%
175 kW	97%	91%

ICAT PROGRAM: 350kW Diesel Generator Riverside, California



75kW Diesel Generator Edwards AFB, California



75kW Diesel Generator Edwards AFB, California



75kW Diesel Generator Edwards AFB: Particulate Sampling

Particulate sampling

Particulate sampling was conducted by the University of Utah Department of Chemical and Fuels Engineering.

Instruments used for real-time samples

- Scanning Mobility Particle Sizer (SMPS)
- Photoelectric Aerosol Sensor
- Dust Track
- Photoacoustic Analyzer

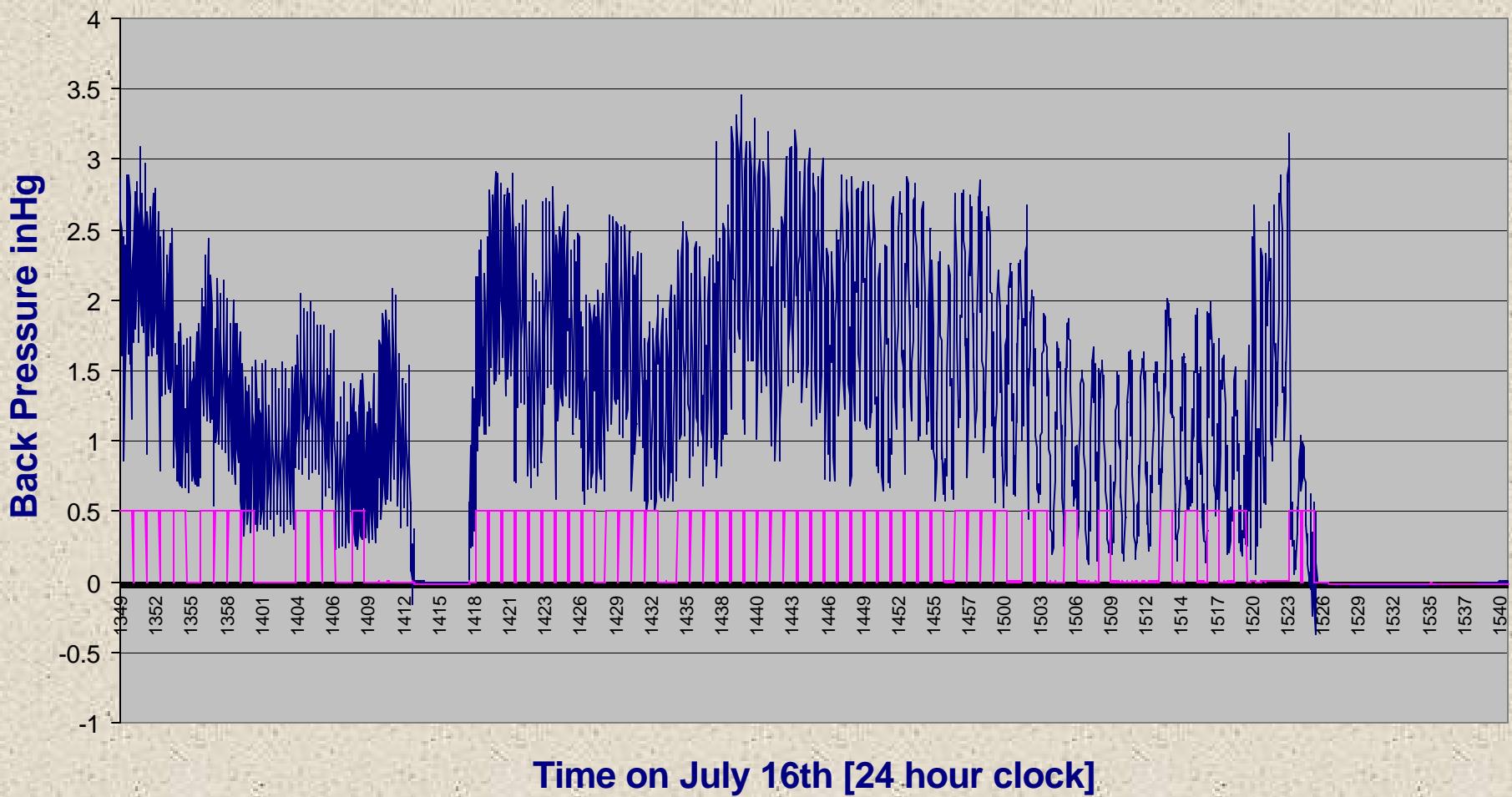
75kW Diesel Generator Edwards AFB, California

Preliminary Results

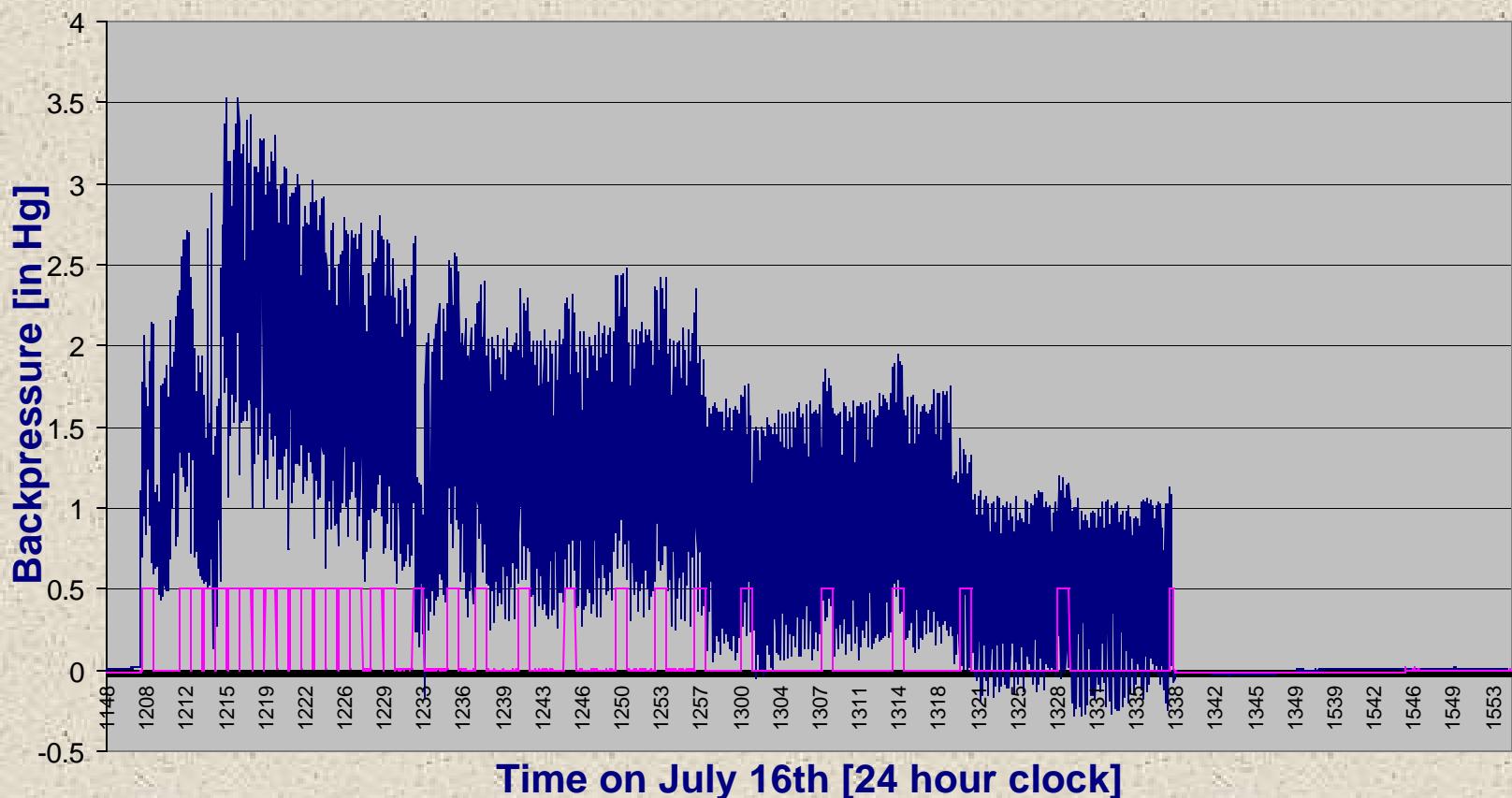
- Low back pressure (Max. Pressure 3 inHg, 100mbar, 40 inH₂O)
- Systems regenerated more than necessary
- Results below are from Utah's Scanning Mobility Particle Sizer

Load	Efficiency (TPM) Tactical generator DX-02	Efficiency (TPM) Tactical generator DX-04
Idle	59.0%	65.0%
9 kW	46.3%	67.0%
19.2 kW	44.2%	46.9%

75kW Diesel Generator Edwards AFB, California



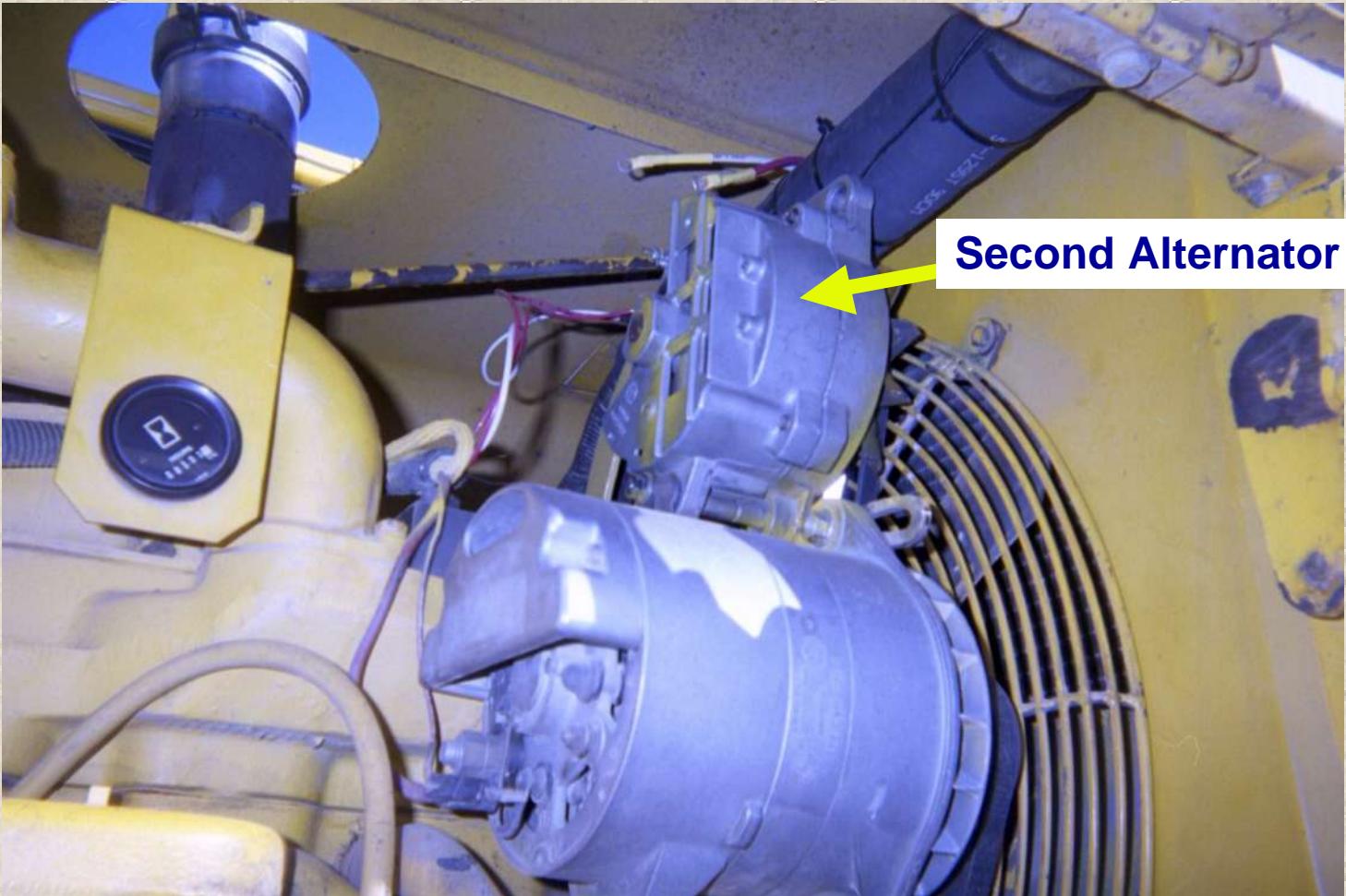
75kW Diesel Generator Edwards AFB, California



Riverside County: Grader Riverside, California



Riverside County: Grader Riverside, California



CONCLUSIONS

Positive Results

- Reliable regeneration independent of exhaust temperature
- Consistency in maintaining low engine back pressure

Feedback

- Reduce size and weight
- Refine regeneration strategy
- Improve filtration efficiency