


CEMS Recent Developments in the U.S.

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Wednesday, June 9, 2004

Introduction

- US CEMS Certification Process
 - Development of Performance Specifications for CEMS
 - New and Existing Performance Specifications
 - Ongoing work on methods and CEMS
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- A stylized, low-poly mountain range graphic in shades of brown and tan, positioned in the bottom right corner of the slide. The mountains are layered, creating a sense of depth. The background of the slide is a gradient from dark blue at the top to a lighter blue at the bottom, with a thin white horizontal line near the top.

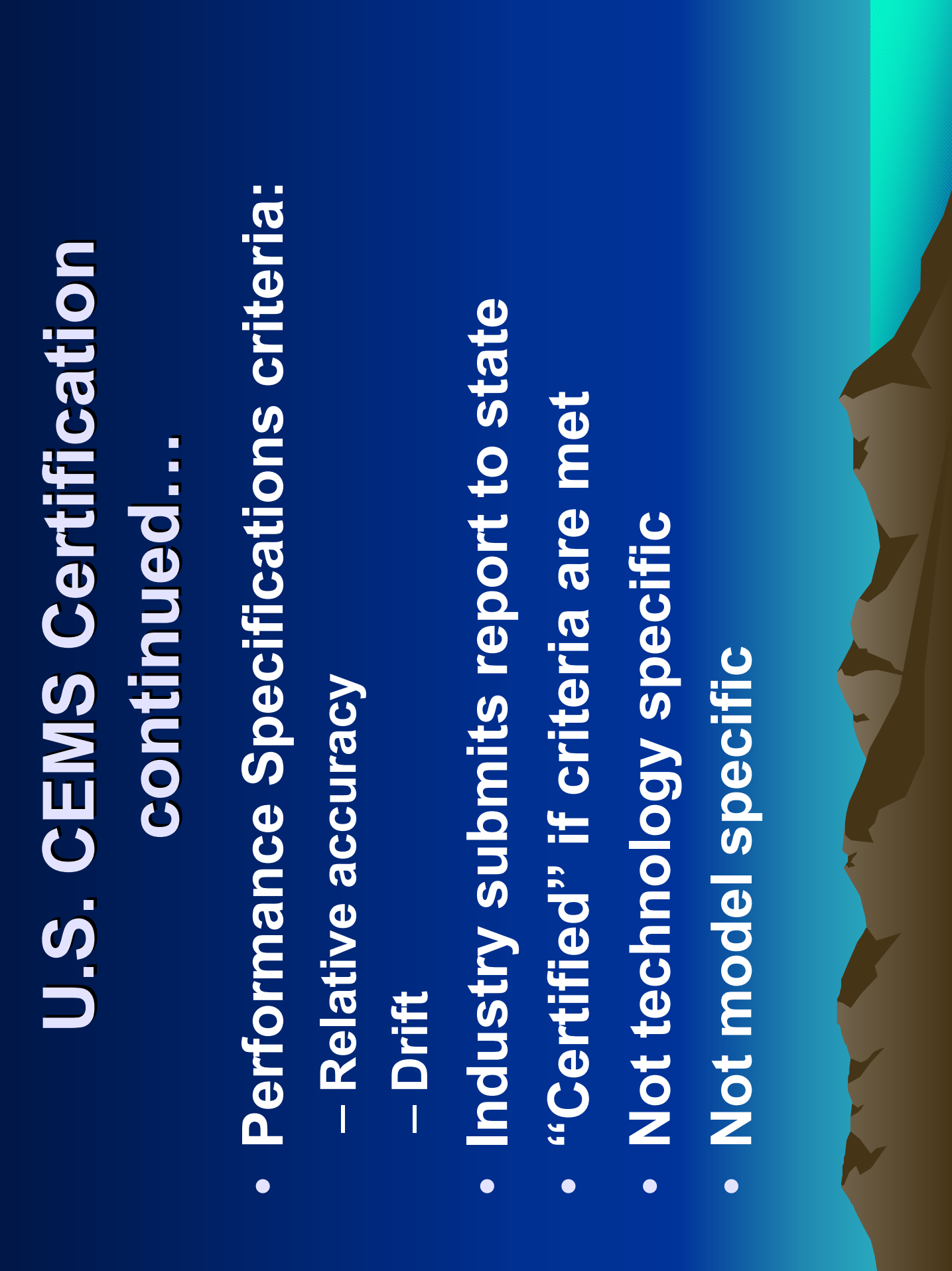
U.S. CEMS Certification

- Regulations requires industry to certify through testing
- Use specifications in 40CFR60, Appendix B



U.S. CEMS Certification

continued...

- Performance Specifications criteria:
 - Relative accuracy
 - Drift
 - Industry submits report to state
 - “Certified” if criteria are met
 - Not technology specific
 - Not model specific
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Performance Specifications

- Opacity monitoring
- O₂, CO, NOx, SO₂, TRS, H₂S, VOC, Total Hydrocarbons, GC, FTIR

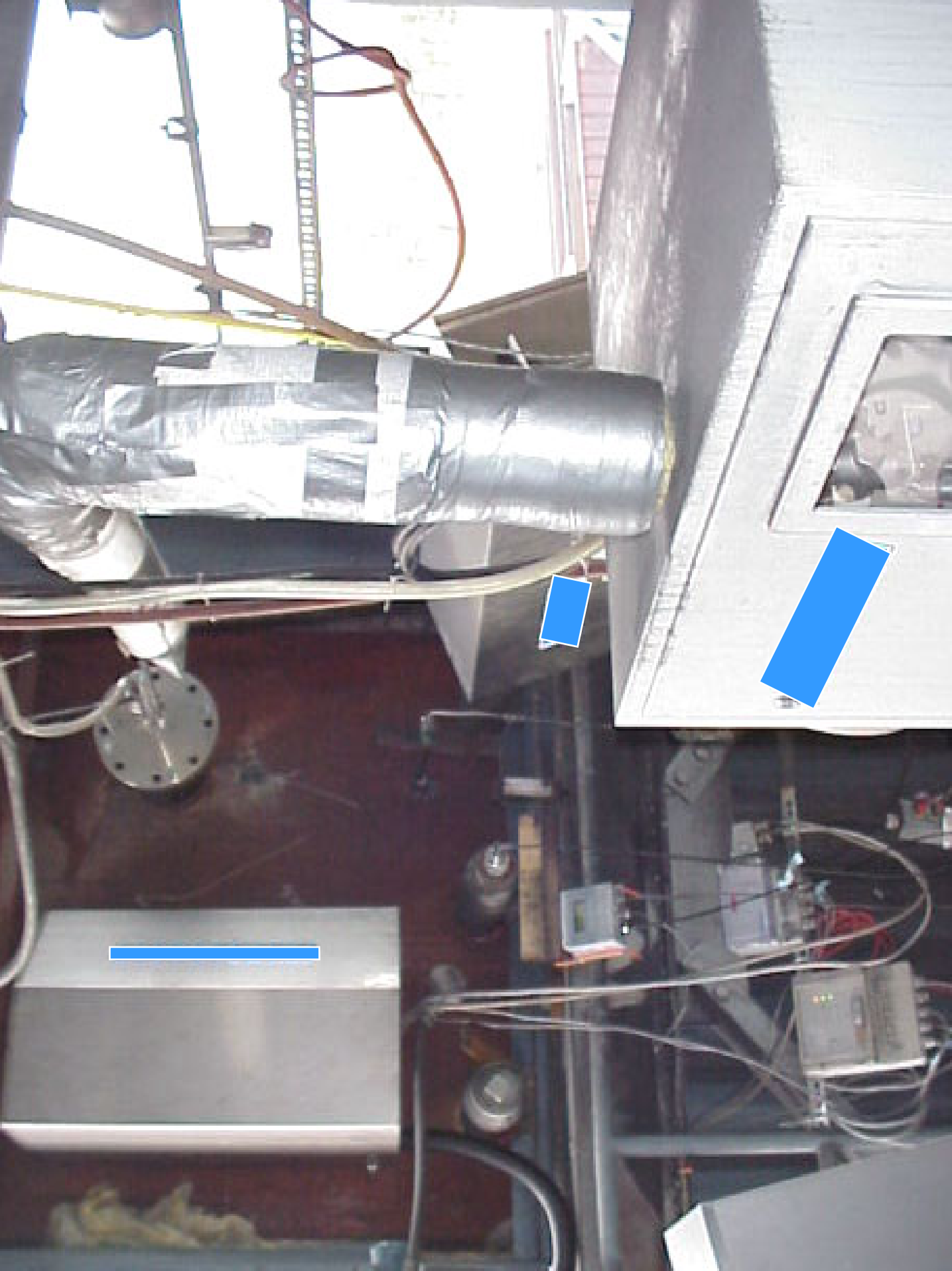


New Performance Specifications

- PS-11 for Total PM finalized
 - Used ISO 10155 as basis
 - Stratification will cause difficulty in correlations
 - Isokinetics may be important
 - Use of paired sampling trains
 - Low emitting sources need less stringent criteria in U.S.
- PS-12A for Gaseous Hg proposed

Other Performance Specifications

- PS-12 for Total Hg proposed
- PS-10 for multi-metals proposed
- Conditional PS for Ammonia
 - Animal feeding operations
 - ETV program for CEMS



How Performance Specifications Are Developed

- Performance data from:
 - Vendors
 - European friends
 - EPA's Environmental Technology Verification Program
 - Literature (EU, ISO, ASTM, other, etc.)
 - Industry testing
 - Demonstration testing
- Usually Source Category Specific

Needed Performance Specifications

- Dioxin
 - PM 2.5
 - Ammonia
 - Low level NOx
 - Remote sensing
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Ongoing Work at EPA

- Method for Acrolein
- Monitoring method for ammonia
- Optical remote sensing for
 - ammonia
 - hydrocarbons
 - flux measurements of pollutants
- Multimetals CEMS
- Digital camera for visible emissions
- Leak detection with video camera



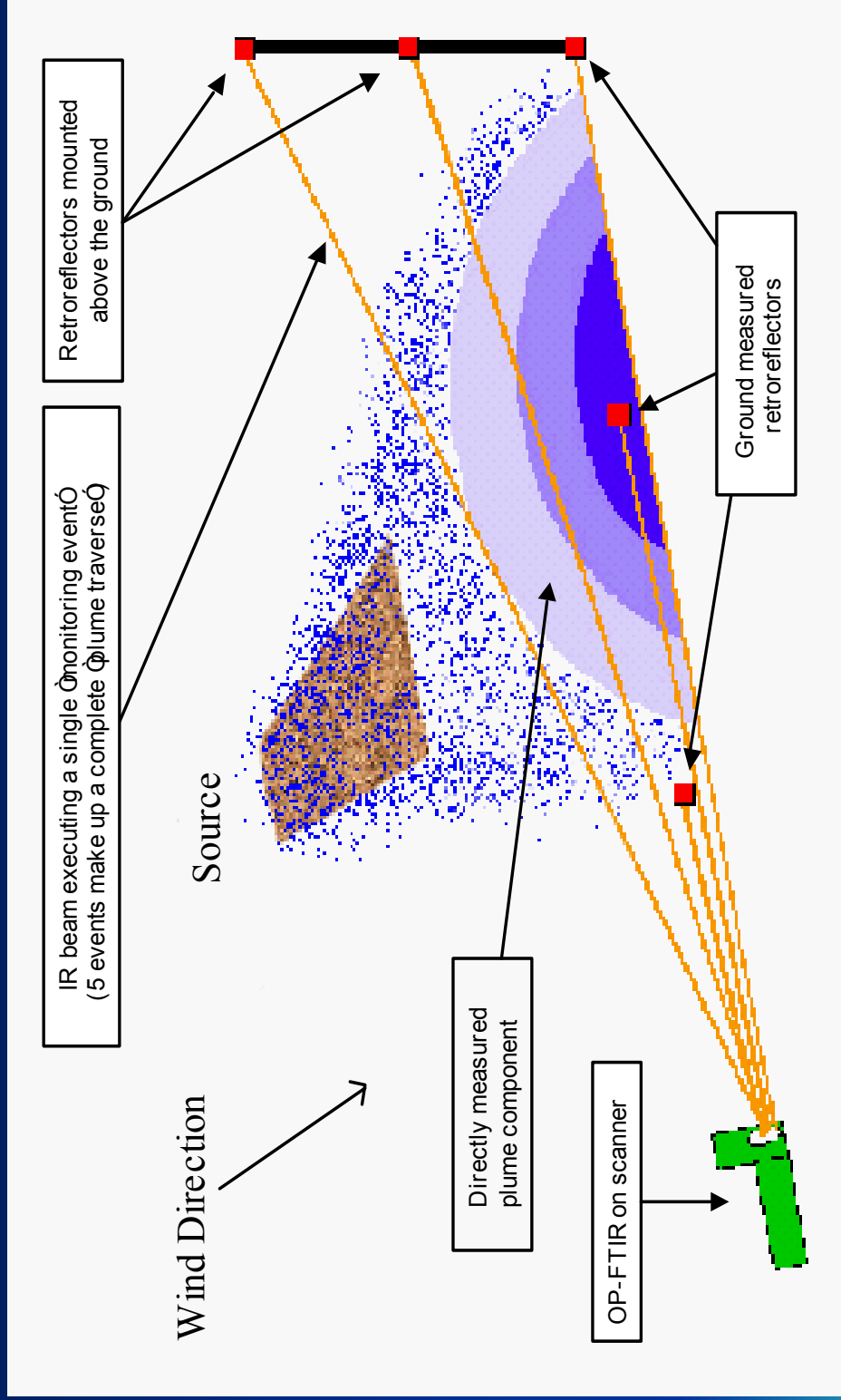
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Flux Measurements



Flux Measurement



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While They Last



SE





Multimetals CEMS

- X-Ray fluorescence
 - 19 elements
 - Pharmaceutical incinerator
- ICAP
 - Military incinerator
- ABS-LIPS
 - Aerosol Beam Focused Laser-Induced Plasma Spectrometer





Leak Detection in Petroleum Industry

- Optical Remote Sensing of Leaking Components
- Sandia National Laboratory
 - Developed first prototype
 - Other developers now
- Many leaks for remote site
 - Not component by component testing

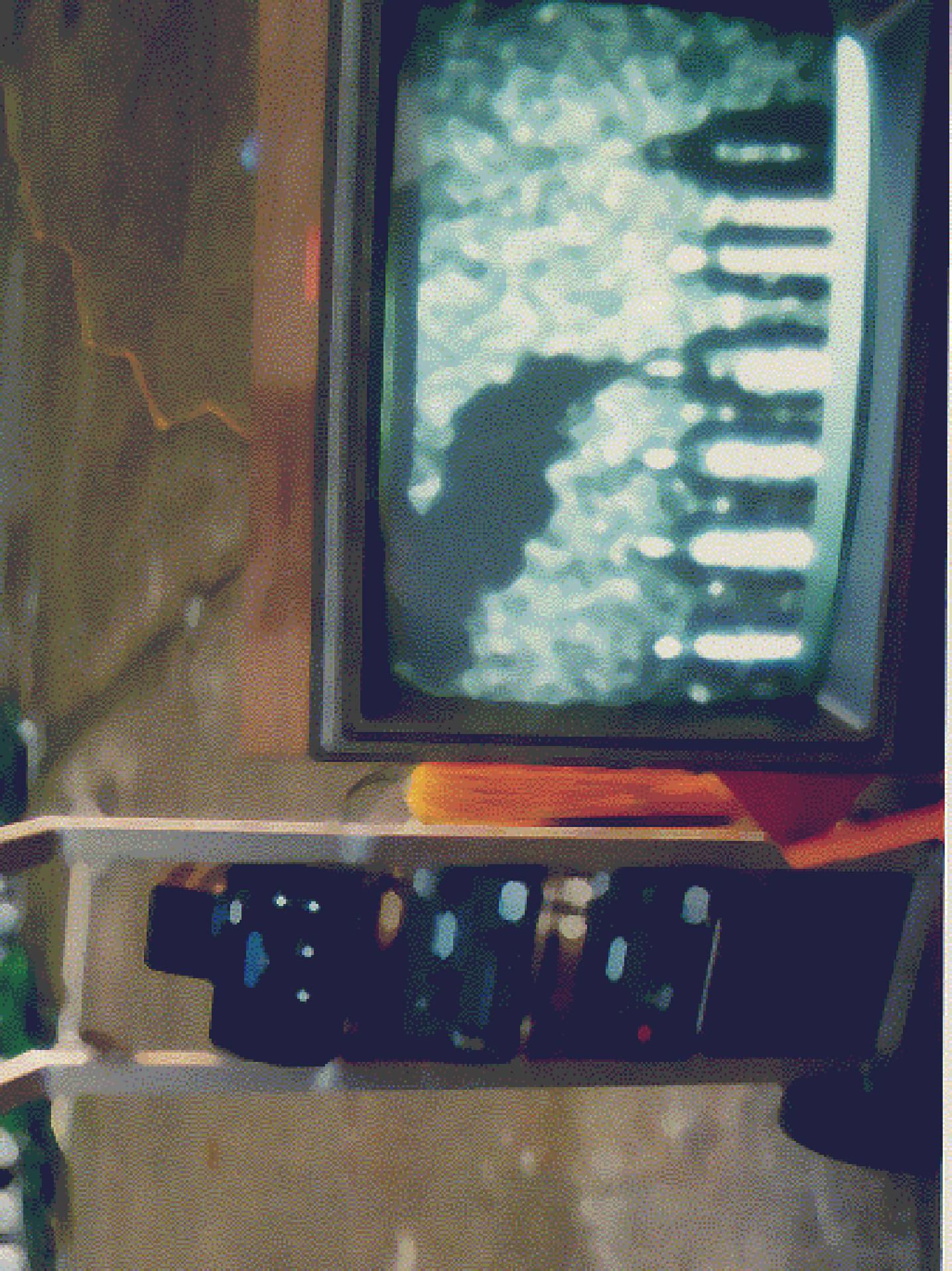
Shoulder-mounted camera



Backpack power/control unit







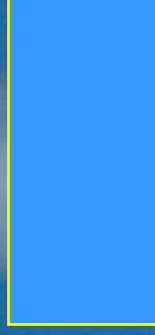
Digital Opacity Compliance System (DOCS)

- ***Potential Alternative to EPA Reference Method 9 (visible emissions)***
- ***U.S. Air Force, Univ. of Utah, Northrop Grumman, and U.S. EPA***





When sky is employed as background, the DOCS is more accurate and reliable (less variable) than human observers



Future Communications

- Conference is excellent information resource
- Develop a process to continue exchange of information
- Learn how we may work together for mutual benefit

