

# Long Term Field Evaluation

Marriott Key Bridge, Arlington, VA

April 10, 2003



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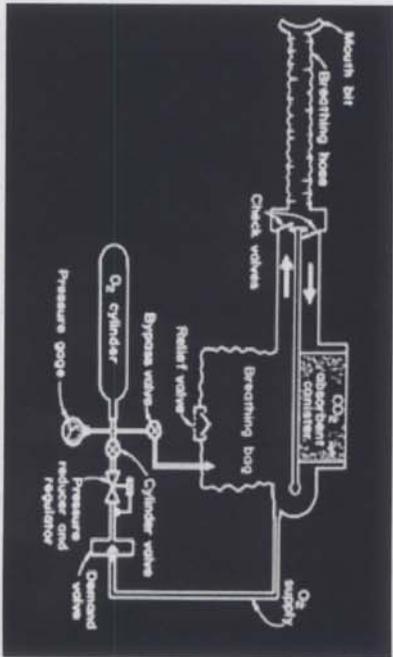
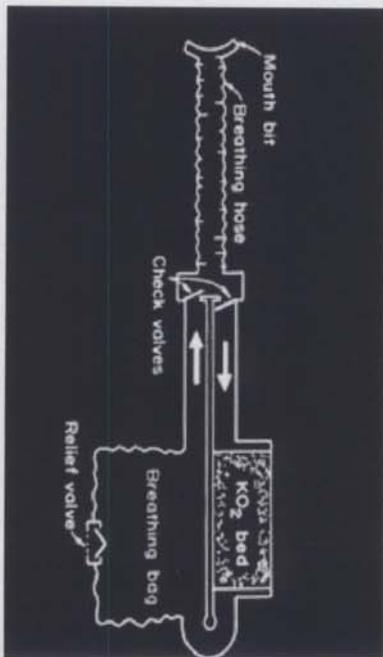
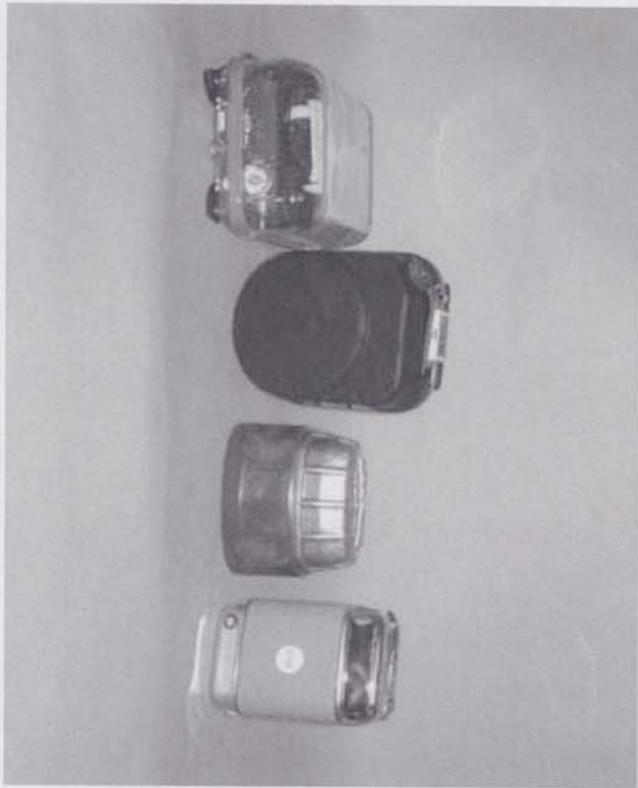


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# Approved SCSRs and Schematics



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# Long Term Field Evaluation

- ◆ Joint MSHA/NIOSH project
- ◆ Objective
  - Track reliability of field deployed SCSR's
- ◆ Method
  - Sample, replace and inspect
  - Measure life support capability
  - Compare to new SCSR's



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# Reliability

- ◆ Reliability = Will my SCSR work?
  - Is there quality control at the point of manufacture?
  - How has it been handled?
  - How old is it?
- ◆ Reliability = When should an SCSR be removed from service?
  - Are the inspection criteria sound?
  - Are miners well trained?
- ◆ Reliability = Will evacuation under oxygen be successful?
  - Are miners well trained and prepared?
  - Do they have confidence?



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# Reliability Issues LTFE

## ◆ Issues

- Critical SCSR problems were missed because too few SCSR's were collected and tested
- Sometimes LTFE findings are hard to interpret

## ◆ Solutions:

- Expand LTFE from 50 to 200 SCSR's per year
- Include FSR in LTFE
- Learn how to compare BMS results to MT#4.



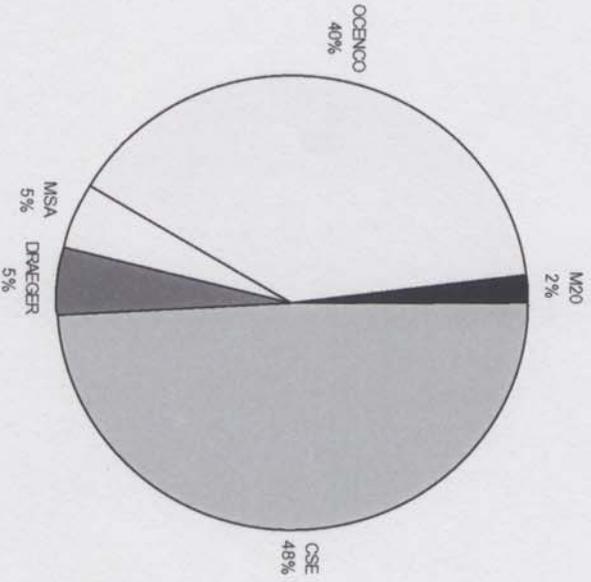
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# In-Mine Collection



	CSE	DRAEGER	MSA	FSR	OCENCO	M20	Total
2001	94	9	9	70	76	4	262
2002/2003	94	20	20	70	76	20	300



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# LTFE Testing



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# FSR Field Evaluation



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# Reliability Issues

When should an SCSR be removed from service?

## ◆ Issues

- Poor decision making
  - ◆ Imperfect information
  - ◆ Inattention
- No unanimity of judgement and action
- Some confusion about who is accountable for safekeeping, as well as what safekeeping means

## ◆ Solutions

- New QC standard
- Training
- Make the units easier to inspect
  - ◆ Pass/fail indicators for temperature and mechanical shock.



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# Decision Making

	<b>As-Approved</b>	<b>Out-of-Compliance</b>
<b>Passes</b>	Keep in Service	Keep in Service
<b>Fails</b>	Remove from Service	Remove from Service



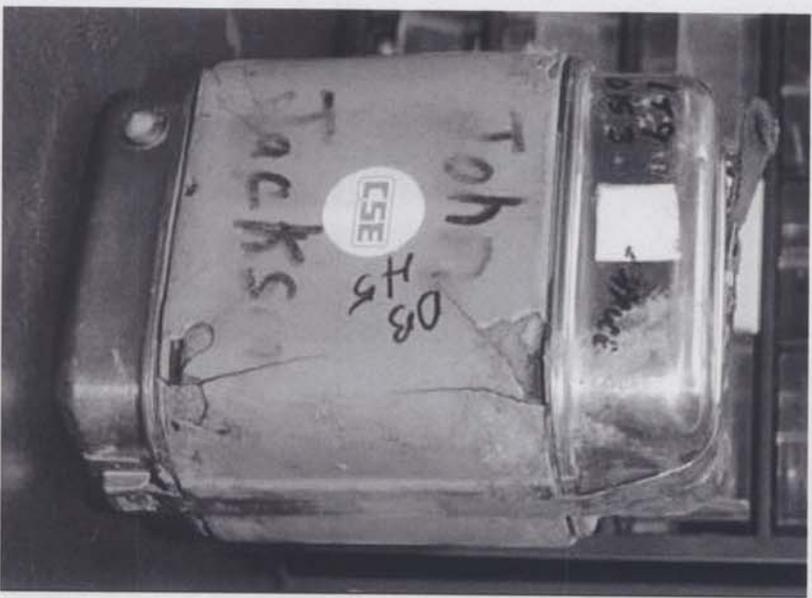
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# CSE SR-100



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# Draeger OXY K-Plus

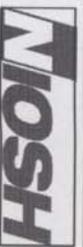


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# Ocenco EBA 6.5



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# A training package to teach ...



- ◆ How to properly conduct daily and 90 day inspection
- ◆ How to care for an SCSR
- ◆ Criteria for removing an SCSR from service

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**MOSH**

# Update: Training Modules

## ◆ Development

- Agreement established between NIOSH and MSHA
- Partnerships include NIOSH, MSHA, BCOA, UMWA, and SCSR Manufacturers
- CBT being developed by PowerTrain under existing DOL contract funded by NIOSH

## ◆ Distribution

- MSHA personnel will introduce and distribute at individual mines
- MSHA will emphasize the SCSR modules to increase awareness
- SCSR modules will be a focus of a new initiative utilizing National Guard Teleconferencing Resources



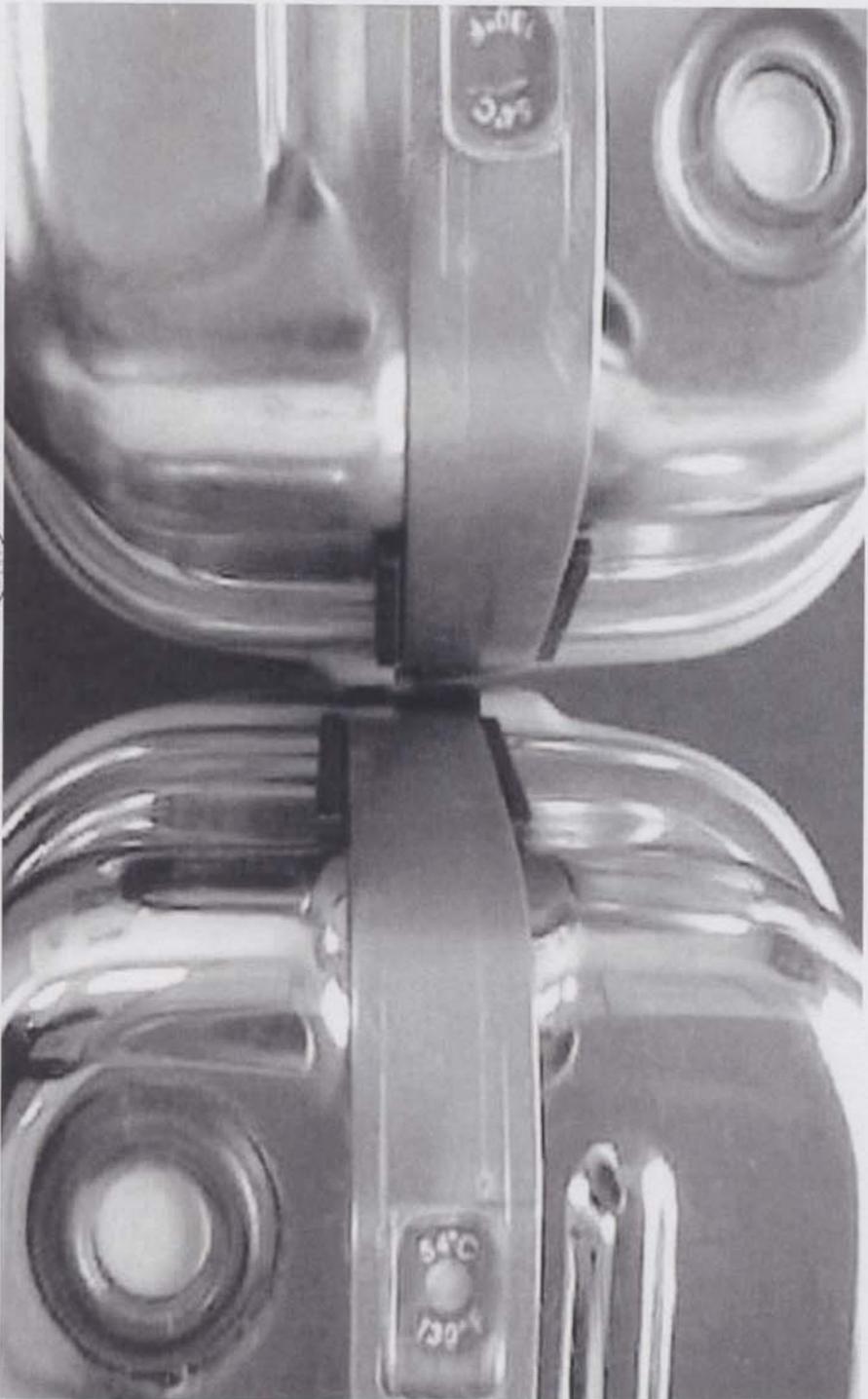
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# SR-100 Temperature Sensor



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# Reliability Issues

## Non-Destructive Testing (NDT)

- ◆ Issues:
  - We are starting to see SCSR's which will pass daily inspection, but will otherwise be out of compliance.
  - ◆ Some SCSR's will show decreased life support capacity.
  - ◆ Catastrophic failure
  
- ◆ Solutions:
  - Practical, non-destructive testing (NDT) to sort SCSR's is an emergent technology.
    - ◆ Make noise measurements on SCSR's collected as part of the LTFE
    - ◆ Collaborative effort with manufacturers.
  - Adjust service life to account for:
    - ◆ Multi-shifting
    - ◆ Unknown handling history

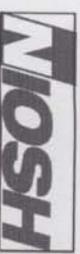


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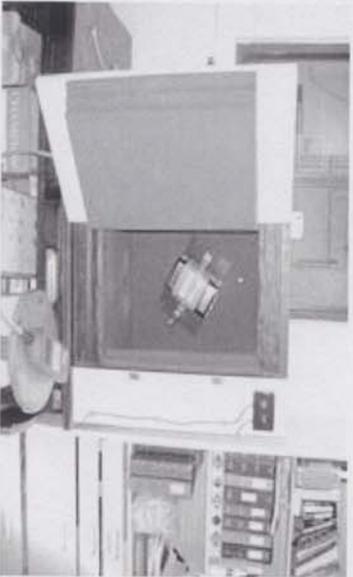


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# Non-Destructive Testing



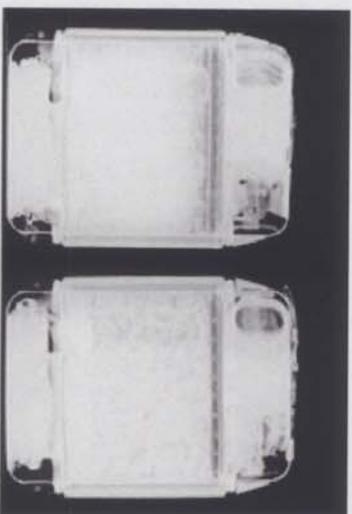
Laboratory ND Noise Test



In-Mine ND Noise Test



Draeger AMS



Neutron Radiography

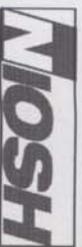


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# MSA Life Saver 60



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