



**MAY-JULY 2006 SELF-CONTAINED SELF-RESCUERS
INSPECTION INVENTORY REPORT**

**Report to the Director of the
Office of Miners' Health, Safety and Training**

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May-July 2006 Self-Contained Self-Rescuers Inspection Inventory Report

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West Virginia Code §56-4-4 required the Director of the Office of Miners Health Safety and Training (OMHS&T) to issue instructions to all underground mine operators and independent contractors for reporting on the results of their 90-day self-contained self-rescuer (SCSR) inspections. The first reporting period ended July 31 with reports due no later than August 15, 2006. This report summarizes the results and lessons learned. Instructions were in letter provided to all holders of underground, independent control and preparation permits in the state by Acting Director Jim Dean on July 6, 2006.

The data collected represents the first attempt at a comprehensive SCSR reporting system. As with anything the first time there were minor problems in the reporting process. However, even with these problems the response of the permit holders was almost universally supportive of the effort. At one point everyone associated with the mining permits places their lives in the hands of their SCSR. If an accident occurs the SCSR may well make the difference between them getting home or not. All those who interacted with the OMHS&T on this report understood that this was an important activity and treated it as such. Our thanks go out to the hundreds of people who participated in this effort.

INSPECTION REPORTING PROCESS

Permit holders were instructed to follow the manufacturer's required 90-day inspection procedures. There were to be reported in the form of an Microsoft Excel spreadsheet which was provided on OMHS&T web page (www.wvminesafety.org) and a hard copy was included in the transmitter letter.

They were instructed to provide:

State Mine/Contractor ID #	The current ID number issued by OMHS&T
Make/Model of SCSR	CSE SR100 or Ocenco M20 or Ocenco EBA6.5 or Drager OxyK
Serial Number	The manufacturer's serial number for the particular SCSR
Manufacturer Date	The date indicated on the unit by the manufacturer

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In-Service Date	The date the unit was issued by the mine or contractor to a miner or placed in a cache
Removal Date	The date the unit was removed from service
Removal Reason	Missing (stolen/lost) or Used or failed (complete appropriate field) or expired (reached end-of-life date) or reassigned (list individual in comment field)
Inspection Date	The date the SCSR was inspected during the reporting period
Inspector Name	Name of person inspecting the SCSR
Inspector Certification #	The WV certification number of the inspector (if certified)
Location Assigned	Carried or cached
Location Number	The cache location number corresponding the mine map
Seals Intact	Results of manufacturers required inspection – yes or no
All parts Intact	Results of manufacturers required inspection – yes or no
Indicators Pass	Results of manufacturers required inspection – yes or no
Physical Shape Pass	Results of manufacturers required inspection – yes or no
Shake/Noise Test Pass	Results of manufacturers required inspection – yes or no
Unit Pass	Passed all manufacturers required tests
Comment	Description of observation that caused failure or to whom the SCSR was reassigned

As this was the first time either the permit holders or state had attempted to collect information in this format there were numerous problems with data formatting and communications that are being address through the development of automated reporting system being developed for the OMHS&T by the Governors Office of Technology (GOT). It is hoped to be in place before the next reporting cycle.

The need to reformat data fields and verify information resulted in the delay of this report. The goal is to have these reports competed and posted on the OMHS&T web page within 30 days from the end of each reporting cycle.

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INSPECTION RESULTS

A total of 10,291 SCSRs were reported in this first cycle. One of the problems encountered was inconsistent use of permit numbers. This was compounded by the current OMHS&T information management system that is being revised. Acting Director Jim Dean initiated a review of information management systems in the office that identified several critical needs. One of these was difficulty of existing data bases to share information. This has made it difficult to compare the permit numbers and mine names submitted in the first SCSR report to those in the permit data base. Therefore, it is still being checked if all active permittee's have submitted SCSR reports. This is scheduled to be corrected prior to the next reporting cycle.

Since it was not sure what areas of interest that the report data would highlight it all data reporting formats were not finalized prior to this analysis. When the GOT completes its work standard reports will be available on the website along with the ability to generate custom reports.

For this document only highlights are provided. When the website is complete this data will be searchable.

	CSE SR-100		Ocenco EBA-6.5		Ocenco M-20		Draeger OxyK-Plus		All Totals	
INSERVICE										
Total	6,627		3,577		70		17		10,291	
Market Share	64.4%		34.8%		0.7%		0.2%		100.0%	
Carried	4,144	62.5%	0	0.0%	70	100.0%	17	100.0%	4,231	41.1%
Cached	2,365	35.7%	3,379	94.5%	0	0.0%	0	0.0%	5,744	55.8%
Warehoused	110	1.7%	202	5.6%	0	0.0%	0	0.0%	312	3.0%
Unknown	8	0.1%	0	0.0%	0	0.0%	0	0.0%	8	0.1%
REMOVED										
Total	272		50		0		0		322	
Removal Rate	4.1%		1.4%		0.0%		0.0%		3.1%	
Moisture Indicator	57	21.0%	0	0.0%	0	0.0%	0	0.0%	57	17.7%
Temp Indicator	63	23.2%	0	0.0%	0	0.0%	0	0.0%	63	19.6%
Age	33	12.1%	30	60.0%	0	0.0%	0	0.0%	63	19.6%
Damaged Case	61	22.4%	5	10.0%	0	0.0%	0	0.0%	66	20.5%
Damaged Seals	27	9.9%	0	0.0%	0	0.0%	0	0.0%	27	8.4%
Failed ASMD Test	32	11.8%	0	0.0%	0	0.0%	0	0.0%	32	9.9%
Missing security seal	0	0.0%	2	4.0%	0	0.0%	0	0.0%	2	0.6%
Pressure gauge	0	0.0%	13	26.0%	0	0.0%	0	0.0%	13	4.0%
MISSING										
Total	24	80.0%	6	20.0%	0	0.0%	0	0.0%	30	100.0%
Removal Rate	0.4%		0.2%		0.0%		0.0%		0.3%	

The CSE Corporation SR-100 was the most popular SCSR in use during the reporting period with 64.4 percent of the units in service. The 4,144 SR-100 carried represent all but 87 of the 4,231 person-wearable SCSRs in service in the state with an addition 2.365 SR-100s stored in

caches in the mines or on equipment. Likely due the added wear associated with the person-wearable units, the SR-100 had the highest removal rate of 4.1 percent of those SR-100s in service. The leading single cause of removal was activation of temperature indicator. This was followed the by impact related causes damaged cases, damaged seals, activated moisture indicators and noise (acoustic solids movement detector testing). During this period some 33 units reached the prescribed end of their ten year service life. In addition, there were 24 units reported missing.

Ocenco Inc was the next most widely used SCSR among West Virginia miners with 3,647 units between its EBA-6.5 and M-20 models representing 34.5 percent of the SCSRs in service in the state. The EBA-6.5 is exclusively cached in the mine or on equipment while the M-20 is exclusively person-wearable. As might be expected for cached units the removal rate from impact related damage was considerably lower with only 7 units being report as removed for case damage. Twenty-six of those removed were the result of reading on the pressure gauges which could have been the result of exposure to excessive temperature or problems with the regulator and seals. The largest reason for removal was reaching the prescribed end of service life, ten years if cached and 5 years if carried. In addition there were 6 units reported missing.

Draeger Inc's OxyK Plus represents the smallest portion of SCSRs in use during the period. While there were no reported removals, the small numbers do not provide a meaningful comparison of ruggedness.

LESSONS LEARNED FOR SCSR USERS

The number difference in removal rates between person-wearable and cached units, while expected, is problematic. When taken in conjunction with anecdotal evidence from interviews with miners it indicates a lack of proper handling of the SCSR subjecting them to a higher than expected number of impact related damage.

The number of units that have been removed as the result of temperature related indicator also points to issues with handling. The SR-100 have a temperature threshold of 130° Fahrenheit before the indicator activated while exposure of Ocenco units to temperatures over 160°F rupture of the protective frangible disc causing safe depressurizing of the oxygen bottle. The fact that a significant number of both units were exposed such that they were removed indicates lack of proper handling as well.

Since people who depend on these units must be assumed to no be abusing them on purpose the logical explanation is they are not aware they are risking their lives by improper handling of their SCSRs.

The OMHS&T has been looking closely at SCSR training and in the recently promulgated rules of personal safety equipment it stipulated that training on the care and use must be included in all required SCSR training. This was based on anecdotal evidence presented by MSHA, NIOSH, manufacturers and miners to the Mine Safety Technology Task Force and included in their June 29, 2006 report to the Director.

Comments have been given to MSHA and NIOSH staff working on revised SCSR training that individual handling and use of the SCSR must be included in any training. It is recommended that you review your company training and emphasis to these issues in your current materials.

LESSONS LEARNED FOR THE INSPECTION REPORTING

There is a need for definition of qualifications for the individual doing the 90-day inspections. Conversations with those doing these inspections indicated that the manufacturer's instructions are not specific enough to allow consistent determination of removal for subjective indicators. There is little disputing if a gauge reads zero or indicator is obviously blood red. However, when does case abrasion become removable damage? How hard must you shake a chemical unit to know the acoustic solid movement detector has successfully passed a unit? OMHS&T will work with manufacturers and federal agencies to ensure that adequate materials are available for SCSR those doing the 90-day inspections.

An automated system to ensure consistent usage of terms is needed to speed data processing. The number of SCSRs in the state will likely more than triple as orders pending for caches begin to arrive. If the time spent cleaning up data for these initial 11,000 some SCSR would be impractical for 35,000. OMHS&T will convene a focus group of mine safety directors to baseline the specifics of the system.

Also, several firms are marketing tools to ease the inspection and inventory of SCSRs in the mines, OMHS&T will work with these and other private sector firms interested to ensure seamless transfer of data of in-mine systems.

As the data quality improves, individual mine reports will be provided to OMHS&T inspectors so they can begin spot validating the inspection results.