

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION &  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555

May 16, 1994

NRC INFORMATION NOTICE 94-35: NIOSH RESPIRATOR USER NOTICES, "INADVERTENT SEPARATION OF THE MASK-MOUNTED REGULATOR (MMR) FROM THE FACEPIECE ON THE MINE SAFETY APPLIANCES (MSA) COMPANY MMR SELF-CONTAINED BREATHING APPARATUS (SCBA) AND STATUS UPDATE"

Addressees

All holders of operating licenses or construction permits for nuclear power reactors, and all licensed fuel facilities.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to two recent respirator user notices issued by the National Institute for Occupational Safety and Health (NIOSH) of the Department of Health and Human Services concerning the unexpected separation of mask-mounted regulators from self-contained breathing apparatus (SCBA) facepieces during firefighting activities. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On February 23, 1994, NIOSH issued a respirator user notice (Attachment 1) describing factors that can contribute to the separation of mask-mounted regulators from SCBA facepieces. The unexpected separation of a mask-mounted regulator could result in an individual being unprotected in an environment that might pose an immediate threat to the life and health of that individual. These regulators are used on mask-mounted regulator SCBA with the following NIOSH certification numbers: TC-13F-256, TC-13F-257, TC-13F-258, and TC-13F-302. The affected regulators have a quick-connect mechanism and are designated as Mine Safety Appliances Company part number 492488.

In addition, the respirator user notice applies to certain Mine Safety Appliances Company combination air-line and SCBA devices with the following certification numbers: TC-13F-266 and TC-13F-267. The affected regulators have a quick-connect mechanism and are designated as Mine Safety Appliances Company model number 7-1047-1.

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updated on 5/20/94

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Mask-mounted regulator and combination air-line and SCBA devices with regulators that attach to the facepiece with a threaded connector are not affected by the respirator user notice.

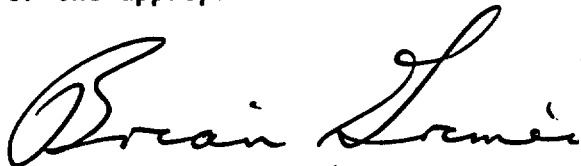
On March 31, 1994, NIOSH issued a respirator user notice status update (Attachment 2), describing the development of a Neckstrap/Regulator-Retainer Kit by Mine Safety Appliances Company and accepted by NIOSH. This neckstrap/regulator-retainer, when properly installed, provides a lock for the regulator-to-facepiece connection. The user notice update states that this retainer must be installed on all Mine Safety Appliances Company mask-mounted regulator respirators used at temperatures below 32 degrees Fahrenheit (F) in order to maintain the NIOSH approval. Although NIOSH believes that proper maintenance will prevent these failures in warm-weather service, NIOSH suggests continual use of the retainer to prevent further occurrences of inadvertent regulator/facepiece separation.

Licensees may wish to share this information with other potential users, such as local fire departments.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation project manager.



Robert F. Burnett, Director  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards



Brian K. Grimes, Director  
Division of Operating Reactor Support  
Office of Nuclear Reactor Regulation

Technical contacts: D. R. Carter, NRR  
(301) 504-1848

J. Roth, NMSS  
(301) 504-3427

**Attachments:**

1. NIOSH Respirator User Notice - February 23, 1994
2. NIOSH Respirator User Notice (Status Update) - March 31, 1994
3. List of Recently Issued NMSS Information Notices
4. List of Recently Issued NRC Information Notices



Centers for Disease Control  
National Institute for Occupational  
Safety and Health – ALOSH  
944 Chestnut Ridge Road  
Morgantown, WV 26505-2888

February 23, 1994

### **NIOSH Respirator User Notice**

#### **Inadvertent Separation of the Mask-Mounted Regulator (MMR) from the Facepiece on the Mine Safety Appliances (MSA) Company MMR Self-Contained Breathing Apparatus (SCBA)**

The National Institute for Occupational Safety and Health (NIOSH) and MSA have received reports of unexpected separation of MMRs from SCBA facepieces during firefighting activities. These regulators are used on MMR SCBA with the following certification numbers: TC-13F-256 (30-minute low pressure SCBA), TC-13F-257 (30-minute high pressure SCBA), TC-13F-258 (60-minute high pressure SCBA), and TC-13F-302 (45-minute high pressure SCBA). The affected regulators have a quick-connect mechanism and are designated as MSA part number 492488.

In addition this User Notice applies to certain MSA combination air-line devices with the following certification numbers: TC-13F-266 and TC-13F-267 (combination air-line and SCBA). The affected regulators have a quick-connect mechanism and are designated as MSA model number 7-1047-1.

It should be noted that MMR and combination air-line and SCBA devices with regulators that attach to the facepiece with the threaded connector are not affected by this Notice.

If the MMR separates from the facepiece, the wearer is left unprotected. Such a separation could be life threatening since these SCBA may be used in immediately dangerous to life and health environments.

The manufacturer has identified three contributing factors that can lead to regulator separation:

1. **Lack of lubrication of the facepiece adapter O-ring.** Not lubricating this O-ring will greatly increase the force required to insert the second-stage regulator into the facepiece. This can result in a user believing the regulator is locked into the facepiece when it is actually only held in by the friction of the O-ring. If the regulator is not properly locked into the facepiece, subsequent disengagement can occur. The manufacturer has published the proper lubrication procedure for the facepiece adapter O-ring which must be followed to ensure proper operation. The manufacturer has reported that many users are not lubricating this O-ring.
2. **Dirt and debris in the quick-connect mechanism.** Dirt and debris in the quick-connect mechanism can prevent it from properly locking into the facepiece. The manufacturer has published a procedure for the proper cleaning of the quick-connect mechanism, as described in MSA's Product Information News, Number 2, June 1992.
3. **Ice formation in the quick-connect mechanism during cold weather operation.** If water enters the quick-connect mechanism and freezes during cold weather operation the regulator may not properly lock into the facepiece. Care must be taken before the regulator is inserted into the

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facepiece to ensure that any ice formation inside the quick-connect mechanism will not interfere with its ability to return to the locked position. This can be done by operating the quick-connect mechanism and visually checking to make sure the mechanism is working properly prior to insertion of the regulator into the facepiece.

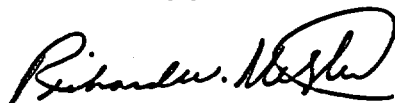
In the interim, MSA recommends the following: (1) Follow the manufacturer's instructions regarding the proper lubrication and cleaning of the quick-connect mechanism. (2) Make sure the quick-connect mechanism is operating properly prior to inserting it into the facepiece. (3) Follow the procedure detailed in the MSA Level I instruction manual including checking the regulator-to-facepiece connection by grasping and pulling on the regulator. Perform this check often during use to ensure the regulator is properly secured. Contact your local MSA office at 1-800-672-2222 if you have questions or need to obtain instruction manuals or maintenance instructions for the proper use and care of the MMR SCBA.

In addition to these three known causes for regulator disengagement, there have been several field reports that ice buildup on the second-stage regulator and facepiece assembly may cause inadvertent disengagement. In subfreezing temperatures ice may form on the junction between the facepiece and the quick-connect handwheel. When this junction is not free to rotate, force on the air-line connecting the air bottle to the regulator may activate the quick-disconnect and cause inadvertent separation to occur. The investigation into the role that ice buildup plays in inadvertent regulator disengagement is continuing by both MSA and NIOSH. Further information will be released as it becomes available.

At this time, NIOSH does not recommend removing the MMR SCBA from warm-weather service; the cleaning and lubrication procedures recommended by the manufacturer seem sufficient to eliminate the possibility of inadvertent warm-weather MMR separation. However, in subfreezing temperatures in the presence of water spray, NIOSH recommends against the use of MMR SCBA. This recommendation stands until data and information are sufficient to convince NIOSH that inadvertent MMR separation is not possible for a properly used and maintained SCBA. Because of the life-threatening implications of any SCBA failure, NIOSH considers the possibility of any failure to be unacceptable.

Users of MSA MMR SCBA who have experienced inadvertent regulator/facepiece separations, or other failure modes, are encouraged to report these incidents to both NIOSH and MSA. Information should be forwarded in writing to NIOSH in care of Mr. Tim Merinar, NIOSH, Certification and Quality Assurance Branch, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505 and MSA in care of Mr. Charles Seibel, Manager of Product Safety, MSA, P.O. Box 426, Pittsburgh, Pennsylvania 15230 or by telephone at 1-800-672-5555 (FAX 412-967-3309). Separations or any other failures involving any SCBA should also be reported to NIOSH.

Sincerely yours,



Richard W. Metzler, Chief  
Certification and Quality  
Assurance Branch  
Division of Safety Research

Centers for Disease Control  
National Institute for Occupational  
Safety and Health - ALOSH  
844 Chestnut Ridge Road  
Morgantown, WV 26505-2888

**NIOSH Respirator User Notice  
March 31, 1994**

**Status Update on the Inadvertent Separation of the  
Mask-Mounted Regulator (MMR)  
from the Facepiece on the Mine Safety Appliances (MSA) Company  
MMR Self-Contained Breathing Apparatus (SCBA)**

On February 23, 1994, the National Institute for Occupational Safety and Health (NIOSH) issued a Respirator User Notice regarding the inadvertent separation of the MMR from the facepiece on the MSA MMR SCBA and combination airline/SCBA that have regulators with quick-disconnect mechanisms. These regulators are used on MMR SCBA with the following certification numbers: TC-13F-256 (30-minute low-pressure SCBA), TC-13F-257 (30-minute high-pressure SCBA), TC-13F-258 (60-minute high-pressure SCBA), and TC-13F-302 (45-minute high-pressure SCBA). The affected regulators have a quick-connect mechanism and are designated as MSA part number 492488.

These regulators are also used on certain MSA combination airline devices with the following certification numbers: TC-13F-266 and TC-13F-267 (combination airline/SCBA). The affected regulators have a quick-connect mechanism and are designated as MSA model number 7-1047-1.

A Neckstrap/Regulator-Retainer Kit has been developed by MSA and has received NIOSH acceptance. This neckstrap/regulator-retainer, when properly installed, provides a lock for the regulator-to-facepiece connection. This retainer must be installed on all MSA MMR respirators used at temperatures below 32 degrees Fahrenheit (F) in order to maintain the NIOSH approval. Although not required at temperatures above 32 degrees F, continual use of the retainer will prevent further occurrences of inadvertent regulator/facepiece separation, should the quick-disconnect mechanism fail to lock properly when inserted into the facepiece.

Use of the neckstrap/regulator retainer is not a substitute for following the manufacturer's recommendations for maintenance and use. Failure to properly lubricate the facepiece adapter O-ring can result in increasing the force necessary to insert the MMR. Failure to properly clean and maintain the quick-disconnect mechanism can result in the build-up of dirt and debris in the locking mechanism. Both of these conditions can result in the regulator failing to

Page 2

properly lock onto the facepiece, thus making inadvertent regulator/facepiece separation likely, even at temperatures above 32 degrees F. The Institute has requested that MSA distribute the neckstrap/regulator retainer to all end users of MMR SCBA, as well as provide it on all new purchases.

In the February 23 Respirator User Notice, NIOSH recommended that MMR SCBA not be used at temperatures below 32 degrees F in the presence of water spray. This recommendation is no longer in effect for those respirators that have the neckstrap/regulator retainer properly installed. All field-deployed MMR SCBA used at temperatures below 32 degrees F must have the neckstrap/regulator retainer properly installed.

Contact MSA for the specific details regarding the availability of the Neckstrap/Regulator Retainer Kit. Their address is:

Mine Safety Appliances Company  
P.O. Box 439  
Pittsburgh, Pennsylvania 15230  
Telephone: (800) 672-5555

Separations or any other failures involving any SCBA should be reported to NIOSH by contacting Mr. Tim Merinar, NIOSH, Division of Safety Research, Certification and Quality Assurance Branch, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505-2888, either in writing or by calling (304) 284-5713.

Sincerely yours,



Richard W. Metzler, Chief  
Certification and Quality  
Assurance Branch  
Division of Safety Research

LIST OF RECENTLY ISSUED  
NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-23	Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of A Waste Minimization Program	03/25/94	All NRC licensees.
94-21	Regulatory Requirements when No Operations are being Performed	03/18/94	All fuel cycle and materials licensees.
94-17	Strontium-90 Eye Applicators: Submission of Quality Management Plan (QMP), Calibration, and Use	03/11/94	All U.S. Nuclear Regulatory Commission Medical Use Licensees.
94-16	Recent Incidents Resulting in Offsite Contamination	03/03/94	All U.S. Nuclear Regulatory Commission material and fuel cycle licensees.
94-15	Radiation Exposures during an Event Involving a Fixed Nuclear Gauge	03/02/94	All U.S. Nuclear Regulatory Commission licensees authorized to possess, use, manufacture, or distribute industrial nuclear gauges.
94-09	Release of Patients with Residual Radioactivity from Medical Treatment and Control of Areas due to Presence of Patients Containing Radioactivity Following Implementation of Revised 10 CFR Part 20	02/03/94	All U.S. Nuclear Regulatory Commission medical licensees.
94-07	Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage under the Revised 10 CFR Part 20	01/28/94	All byproduct material and fuel cycle licensees with the exception of licensees authorized solely for sealed sources.

LIST OF RECENTLY ISSUED  
 NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
94-34	Thermo-Lag 330-660 Flexi-Blanket Ampacity Derating Concerns	05/13/94	All holders of OLs or CPs for nuclear power reactors.
94-33	Capacitor Failures in Westinghouse Eagle 21 Plant Protection Systems	05/09/94	All holders of OLs or CPs for nuclear power reactors.
93-53, Supp. 1	Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station and Lessons Learned	04/29/94	All holders of OLs or CPs for nuclear power reactors.
94-32	Revised Seismic Hazard Estimates	04/29/94	All holders of OLs or CPs for nuclear power reactors.
94-31	Potential Failure of Wilco, Lexan-Type HN-4-L Fire Hose Nozzles	04/14/94	All holders of OLs or CPs for nuclear power reactors.
90-68, Supp. 1	Stress Corrosion Cracking of Reactor Coolant Pump Bolts	04/14/94	All holders of OL or CPs for pressurized water reactors.
94-30	Leaking Shutdown Cooling Isolation Valves at Cooper Nuclear Station	04/12/94	All holders of OLs or CPs for nuclear power reactors.
94-29	Charging Pump Trip during a Loss-of-Coolant Event Caused by Low Suction Pressure	04/11/94	All holders of OLs or CPs for pressurized water reactors.
92-51, Supp. 1	Misapplication and Inadequate Testing of Molded-Case Circuit Breakers	04/12/94	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License  
 CP = Construction Permit



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orig /s/'d by Robert F. Burnett

orig /s/'d by Brian K. Grimes

Robert F. Burnett, Director  
 Division of Fuel Cycle Safety  
 and Safeguards  
 Office of Nuclear Material Safety  
 and Safeguards

Brian K. Grimes, Director  
 Division of Operating Reactor Support  
 Office of Nuclear Reactor Regulation

Technical contacts: D. R. Carter, NRR  
 (301) 504-1848

J. Roth, NMSS  
 (301) 504-3427

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\*See previous concurrence

OFFICE	OGCB/DORS*	TECH ED*	PRPB/DRSS*	PRPB/DRSS*	C:RPS/DRSS*	D:DRSS*
NAME	NECampbell	Mejac	DCarter	JWigginton	LJCunningham	FCongel
DATE	04/22/94	04/07/94	04/29/94	04/26/94	04/26/04	04/26/94

AC:OGCB/DORS	D:NMSS	D:DORS
AJKugler*	RFBurnett*	BKGrimes
04/29/94	04/29/94	05/11/94

DOCUMENT NAME: 94-35.IN

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 Division of Fuel Cycle Safety  
 and Safeguards  
 Office of Nuclear Material Safety  
 and Safeguards

Brian K. Grimes, Director  
 Division of Operating Reactor Support  
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OFFICE	OGCB/DORS	*TECH ED.	PRPB/DRSS	PRPB/DRSS	C:RPS/DRSS	D:DRSS
NAME	NECampbell	MJac	DCarter <i>DC</i>	JWigginton <i>JW</i>	LJunningham <i>LJ</i>	FCongel <i>FC</i>
DATE	04/23/94 <i>72.c.</i>	04/07/94	04/22/94	04/26/94	04/26/04	04/24/94

AC:OGCB/DORS	D:NMSS <i>B</i>	D:DORS
AJKugler <i>AJ</i>	RFBurnett <i>RF</i>	BKGrimes
04/29/94	04/29/94	04/ /94

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Mask-mounted regulator and combination air-line and SCBA devices with regulators that attach to the facepiece with a threaded connector are not affected by the respirator user notice.

NIOSH believes that proper maintenance will prevent these failures in warm-weather service. Therefore, NIOSH does not recommend removing the mask-mounted regulator SCBA from warm-weather service. However, in subfreezing temperatures in the presence of water spray, NIOSH recommends against the use of mask-mounted regulator SCBA. This recommendation stands until data and information are sufficient to convince NIOSH that inadvertent mask-mounted regulator separation is not possible for a properly used and maintained SCBA.

Licensees may wish to share this information with other potential users, such as local fire departments.

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Robert F. Burnett, Director  
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 and Safeguards  
 Office of Nuclear Material Safety  
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Brian K. Grimes, Director  
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\*See previous concurrence

OFFICE	OGCB/DORS	*TECH ED.	*PRPB/DRSS	*PRPB/DRSS	*C:RPS/DRSS	*D:DRSS
NAME	NECampbell	MJac	DCarter	JWigginton	LJCunningham	FCongel
DATE	04/13/94 <i>J.E. Campbell</i>	04/07/94	04/11/94	04/11/94	04/11/04	04/12/94

AC:OGCB/DORS	D:NMSS	D:DORS
AJKugler <i>AJK</i>	RFBurnett <i>RB</i>	BKGrimes <i>BK</i>
04/14/94	04/14/94	04/ /94

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Brian K. Grimes, Director  
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OFFICE	OGCB/DORS	*TECH ED.	PRPB/DRSS	PRPB/DRSS	<del>C:RPS/DRSS</del>	D:DRSS
NAME	NECampbell	MJac	DCarter	JWigginton	LJLanningham	FCongel
DATE	04/ /94	04/07/94	04/11/94	04/11/94	04/11/04	04/12/94

*w/comment*

*JK*

*4/11/94*

AC:OGCB/DORS	D:DORS
AJKugler	BKGrimes
04/ /94	04/ /94

*Add Burnett to concur.*

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Brian K. Grimes, Director  
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OFFICE	OGCB/DORS	TECH ED.	C:RPS/DRSS	D:DRSS	AC:OGCB/DORS	D:DORS
NAME	NECampabell	M. MEJAC	LJCunningham	FCongel	AJKugler	BKGrimes
DATE	04/ /94	04/7/94	04/ /94	04/ /94	04/ /04	04/ /94

DOCUMENT NAME: MSAIN94.DRS