

EMERGENCY SERVICES DIVISION		Procedure No: FR-SFTY-8.0.8 Revision No: 0 Page 1 of 4
BROOKHAVEN NATIONAL LABORATORY		
Title: Inspection Testing and Maintenance of Fire Extinguishers, Self Contained Breathing Apparatus and Oxygen cylinders		
1.0 PURPOSE: 1.1 To define the safe operations of the maintenance activities associated with testing and maintenance of BNL FE, SCBA & O ₂ cylinders at bldg 599 garage		
2.0 RESPONSIBILITIES: 2.1 Fire Chief: Has overall responsibility of facility 2.2 Facility Manager and Co-Manager: Ensure operations are conducted within current BNL Standard Based Management System (SBMS), Department of Transportation (DOT), National Fire Protection Association (NFPA), and cited Compressed Gas Association (CGA) regulations directly supervising work 2.3 Shift Captain: Assigns work, ensures garage is properly staffed 2.4 Shift Lieutenant: work coordinator responsibilities, ensures adequate work practices, tools and parts for Inspection Testing and Maintenance (ITM). 2.5 Fire fighter: Performs work within this procedure. When in doubt, stop and ask.		
3.0 DEFINITIONS: 3.1 Facility Manager, Co- Manager – as named on DOT license		
4.0 PREREQUISITES: 4.1 Trained as per EM-FR02 series every two years. 4.2 Facility Manager (FM) or Co-Manager must be present. When hydrostatic testing DOT Cylinders, there is a requirement for a two person minimum in garage. This can include the Facility Manager, Co-Manager, or a Supervisor. 4.3 All calibrations current, and equipment in good working order.		
PREPARED BY: Charles LaSalla <hr/> Author/Date File Code: FR20SR.01	REVIEWED BY: Mike Carroll <hr/> Chief /Date J. Vaz <hr/> Division QAC/Date Joseph Levesque <hr/> Technical Reviewer/Date	APPROVED BY: F. Marotta <hr/> Division Manager/Date EFFECTIVE DATE: <u>08-01-01</u> REVIEW CYCLE: 3 years

EMERGENCY SERVICES DIVISION PROCEDURE BROOKHAVEN NATIONAL LABORATORY	Procedure No. FR-SFTY-8.0.8
	Revision No. 0
Procedure Title: Inspection Testing and Maintenance of Fire Extinguishers, Self Contained Breathing Apparatus and Oxygen Cylinders	Page 2 of 4

5.0 PRECAUTIONS:

- 5.1 No open SCBA cylinders shall be in the garage while servicing powdered Fire Extinguishing (FE) agents.
- 5.2 Personnel Protected Equipment (PPE) shall consist of hardhats for overhead operations, eye protection for general shop operations, hearing protection for cylinder discharge & recharge (SCBA/CO₂).
- 5.3 Use gloves for CO₂-operations & abrasion hazards. Face shield, cryo gloves for Halon nitrogen separator. Steel safety shoes general operations.

6.0 PROCEDURE:

6.1 Acceptance of cylinders

- 6.1.1 No activated or contaminated materials in the garage
- 6.1.2 No chemically contaminated equipment in the garage
- 6.1.3 No damaged pressurized cylinders without work planning review.
- 6.1.4 No non-BNL cylinders without Facility Manager permission.
- 6.1.5 No composite cylinders 15 years or older except for disposal.

6.2 Preparation of cylinders:

- 6.2.1 Pressurized water (PW) contents can be disposed of down the sanitary drains
- 6.2.2 Discharge CO₂ cylinders to atmosphere
- 6.2.3 Halon 1211, 1301 must be recovered
- 6.2.4 ABC, BC, PK, Metal-X powder must be recovered. Do not mix different powders. Suspected cross contaminated dry chemical agents are to be disposed of as industrial waste.
- 6.2.5 O₂ discharge to atmosphere
- 6.2.6 SCBA discharge to atmosphere
- 6.2.7 Inergen discharge to atmosphere
- 6.2.8 FM-200- recover agent
- 6.2.9 BNL no longer has antifreeze or foam extinguishers. If encountered, these discharges are to be collected as industrial waste.

6.3 External Inspection of Cylinders

- 6.3.1 Use DOT criteria, NFPA-10, failure- disposal.
- 6.3.2 Remove valve

6.4 Internal Inspection

- 6.4.1 Use DOT criteria and NFPA-10. Failure results in the disposal of shell as described in 6.3.1
- 6.4.2 For six-year inspection scan bar code at this point.

6.5 Full Water Jacket Hydrostatic test:

- 6.5.1 High pressure testing of DOT stamped vessels. Follow hydrostatic test machine instructions & CGA/NFPA/DOT criteria. *Steel cylinders must be hammer tested.*
 Failure: Complete DOT log, x- out (H.T.) date on shell with stamps and drill cylinder (see 6.3.1)
 Passed: Complete DOT log, mark new hydrostatic date on cylinder.

EMERGENCY SERVICES DIVISION PROCEDURE BROOKHAVEN NATIONAL LABORATORY	Procedure No. FR-SFTY-8.0.8
Title: Inspection Testing and Maintenance of Fire Extinguishers, Self Contained Breathing Apparatus and Oxygen Cylinders	Revision No: 0
	Page 3 of 4

Low pressure testing, Non-DOT vessels. Follow operator aid posted at machine & CGA/NFPA criteria.

Failure: Complete DOT Log, drill cylinder (see 6.3.1)

Passed: Complete DOT Log,

Dry Chemical Six-year maintenance, according to NFPA criteria for Dry Chemical, Dry powder.

6.5.2 Empty hydrostatic test water into drain and hydrostatic test area.

6.5.3 Dry Cylinder.

6.6 Documentation:

6.6.1 Complete hydrostatic test inspection form. Low pressure form for non-DOT cylinders. Place Hydrostatic Test label on Non-DOT cylinders.

6.6.2 Scan bar code for hydrostatic tested.

6.7 Refill Procedure:

6.7.1 Inspect to insure it is dry.

<p>Refill water and powder type.</p> <ul style="list-style-type: none"> • Rebuild internal parts on head. • Replace dry chemical (Proper Agent) or water • Confirm weight on scale or • Replace head per internal fill mark (PW) manufacturer instructions. • Set gauge on supply regulator to desired pressure. • Pressurize cylinder. • (monitor pressure on cylinder gauge) • Check for leaks by submersing in hydrostatic tank water. Observe absence of bubbles. 	<p>Refill non-oxygen, non-ingen gas and SCBA cylinders.</p> <ul style="list-style-type: none"> • Rebuild head and replace parts as required. • Replace head as per manufacturer instructions. • Secure cylinders to weighing rack for 50 lbs. or above. • Monitor cylinder contents by weight and pressure gauge. • Refill cylinder using refill equipment procedures. • Disconnect refill lines, bleed out lines, and leak check cylinders. (CO₂ & SCBA use hydrostatic tank; Halon use sniffer). • Finish assembly of CO₂ hoses replace protective caps for fixed system cylinders. 	<p>Oxygen Cylinders , Inergen</p> <ul style="list-style-type: none"> • Send out to be refilled and or heads to be rebuilt.
--	--	--

Scan cylinders for completed inspection. (Hold 24 hours in garage for leak check)
Place in pool and secure as necessary.

**EMERGENCY SERVICES DIVISION PROCEDURE
BROOKHAVEN NATIONAL LABORATORY**

Procedure No. FR-SFTY-8.0.8

Revision No: 0

**Title: Inspection Testing and Maintenance of Fire Extinguishers, Self
Contained Breathing Apparatus and Oxygen Cylinders**

Page 4 of 4

6.8 Disposal:

- 6.8.1 Empty Contents
- 6.8.2 Remove Head
- 6.8.3 Drill hole in cylinder
- 6.8.4 Place in scrap metals area

7.0 IMPLEMENTATION AND TRAINING

Currently established in EM-FR02

8.0 REFERENCES

CGA Pamphlet
DOT License
NFPA National Fire Codes

9.0 ATTACHMENTS

None