



Industry Guard[®] Dry Chemical Fire Suppression System

Owner's Manual

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This purpose of this manual is to familiarize you and your personnel with your
Badger Industry Guard Dry Chemical Fire Suppression System.

IMPORTANT!

It is your responsibility as the system owner to read this manual and ensure proper system operation and personal safety. Follow the instructions in this manual and on the dry chemical cylinder nameplates. Review these instructions with your employees semi-annually or more frequently. Place this manual in an accessible place near the dry chemical system for ready reference.

The technical data contained herein is limited strictly for informational purposes only.

YOUR Badger DISTRIBUTOR IS:

Name: _____
Telephone: _____

Enter Emergency Number for Fire Department Here:

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Pressurized (charged) cylinders are extremely hazardous and if not handled properly are capable of violent discharge and uncontrolled movement. This may result in serious bodily injury, death and property damage.



Failure to follow these instructions and/or improper use or handling of system may cause serious bodily injury, death and property damage.

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CHAPTER 1

GENERAL INFORMATION

1-1 ABOUT THIS MANUAL

This owner's manual provides overall information about your system but does not contain detailed step-by-step installation procedures for the Badger® Industry Guard® Dry Chemical Fire Suppression System (DCFSS). Detailed installation information and associated procedures are contained in the Instruction Manual for Installation, Operation and Maintenance of the system which can be obtained from Badger or a Badger distributor.

1-2 ABOUT YOUR SYSTEM

The Industry Guard DCFSS provides fire protection for a variety of special hazard applications.

The system holds UL listings and FM Approvals as a pre-engineered system.

Systems shall be designed and implemented according to the following:

- NFPA Standard 17, "Standard for Dry Chemical Systems",
- NFPA Standard 33, "Standard for Spray Applications Using Flammable or Combustible Material",
- Other applicable NFPA standards as required for a particular application and design, including, but not limited to, NFPA 70 (NEC) and NFPA 72, Fire Alarm Standard.
- The Design, Installation, Operation, and Maintenance Manual indicated on the cylinder nameplate.
- Any other standards enforced by a local Authority Having Jurisdiction (AHJ).

1-2.1 System Description

The Industry Guard DCFSS is a fixed dry chemical system consisting of a supply of dry chemical stored in one or more Cylinder and Valve Assemblies. Each cylinder is pressure activated by a System Valve Actuator.

The system can be actuated either automatically and/or manually, using mechanical, electrical, or pressure actuation devices. Upon actuation, the dry chemical is discharged through agent distribution piping and specially designed nozzles positioned throughout the protected area.

In order for your system to be in accordance with NFPA Standard 17, it must be installed with both automatic and manual means for operation. Manual actuation is either mechanical or electric. If your system has a control panel, refer to the appropriate manufacturer's control panel manual as applicable.

The system consists of combinations of the following components:

- Cylinder and Valve Assembly
- Control Head Assembly
- Discharge Nozzles
- Actuation Devices (Mechanical or Electric)
- Mounting Hardware
- Alarm Devices and Control Panel (optional)

The primary system control head may be equipped with a microswitch which is used for auxiliary functions such as exhaust fan shutdown, alarm actuation or notification to building fire alarm. This switch is activated upon operation of the control head.

1-3 CLASSIFICATION OF FIRE

The classification of fire is defined as the following:

- Class A: Surface Type Fires; wood or other cellulose-type material (ordinary combustibles)
- Class B: Flammable liquids
- Class C: Energized electrical equipment
- Class D: Combustible metals (such as magnesium, sodium, zirconium, potassium, and titanium)
- Class K: Combustible cooking media (vegetable or animal oils and fats)

Note: The Industry Guard DCFSS is not suited for Class D and Class K type of fires.

1-4 GENERAL CHARACTERISTICS OF THE SYSTEM

The Industry Guard DCFSS contains two types of agent and is capable of encompassing a wide variety of application requirements.

The system can be activated in one of two ways:

- mechanically from a manual release and/or detector, or
- electrically using a tested and listed 24 Vdc control panel.

Both automatic detection devices and manual release(s) can be used.

Cylinders are actuated from stored high-pressure nitrogen. Automatic and manual actuation are available for the Industry Guard DCFSS.

Other actuations are available, such as:

- Mechanical gas valve closure
- Dry contacts for annunciation and electrical shutdown

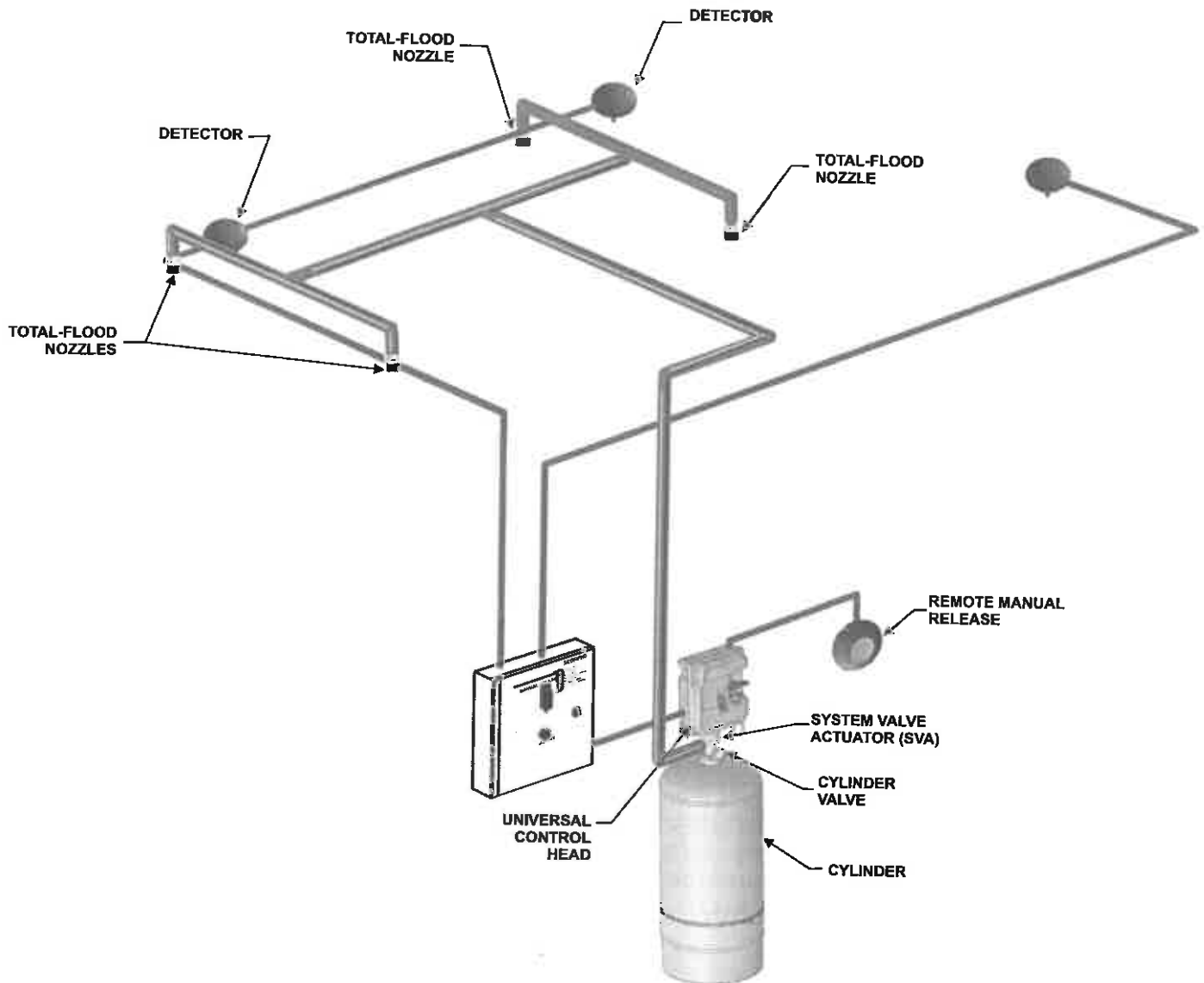


Figure 1-1. Typical Badger Industry Guard Dry Chemical Fire Suppression System.

1-4.1 Fire Hazard Protection

The Industry Guard DCFSS is designed to protect many different types of fire hazard areas. Make sure that you understand exactly what areas are protected by your Industry Guard DCFSS. If you are unsure, contact your Badger distributor.



Upon system alarm notification, all personnel must evacuate the protected space. Failure to do so may result in temporary respiratory difficulties, disorientation, or personal injury.

1-4.2 Extinguishing Properties

When introduced into the combustion zone, dry chemical causes almost immediate flame suppression. Smothering, cooling and radiation shielding contribute to the extinguishing efficiency of dry chemical, but the principal mechanism for the flame extinguishment is the chemical chain-breaking properties of the dry chemicals.

When ABC dry chemical is discharged, the decomposed monoammonium phosphate leaves a sticky residue. This residue seals oxygen from the burning material, thus providing fire suppression and inhibiting re-ignition.

1-4.3 Limitations of Dry Chemicals

Dry chemicals do not inert or secure after discharge is complete. If securement is required, either an extended discharge is required, or a different choice of agents, or both, is necessary.

Dry Chemical system protection is not recommended, however, for delicate electrical equipment, such as:

- Telephone switchboards
- Electronic computers

Such equipment is subject to damage by dry chemical deposit and, because of the insulating properties of the dry chemical, may require excessive cleaning to restore operation.

Dry chemical systems will not suppress fires under the following conditions:

1. Fires or spills that extend beyond the protected area.
2. Fires originating outside the protected area.
3. Sources of ignition which continue to exist beyond the end of the system discharge.
4. Sources of ignition beyond the protected area.
5. Obstruction to the discharge pattern.
6. Unusual air movement.

If any of the above conditions can occur in the area protected by the system, additional fire suppression equipment such as portable fire extinguishers is required. It is the installer's responsibility to survey and assess the hazard(s) involved and recommend the need for additional fire suppression equipment. The installer's recommendation must meet with the approval of the authority having jurisdiction (AHJ).



1-5 HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS®)

The HMIS rating for regular (BC, sodium bicarbonate base), and multi-purpose (ABC, monoammonium phosphate base) dry chemical is as follows:

- Health (H) = 1
- Flammability (F) = 0
- Reactivity (R) = 0

1-6 CLEAN-UP

After discharge, the dry chemical should be removed from any valuable equipment to prevent a possible reaction between materials in the presence of moisture. Personnel in contact with the agent should remove the dry chemical from their skin with tap water.

1-7 SYSTEM INSTALLATION

Your Industry Guard DCFSS must be installed by a authorized Badger distributor. Your system must be installed in a professional manner with genuine Badger components and installation materials as specified in the Design, Installation, Operation and Maintenance Manual.



Do not accept poor workmanship, missing system parts or substitute system components.

The following items must be checked after the system is installed:

1. All areas requiring protection are protected.
2. A means of manually discharging the dry chemical system is provided where it can be operated while leaving the vicinity of the hazard area. The manual control must be clearly labeled.
3. The installer of your dry chemical system should answer any questions you have regarding the components and coverage of the dry chemical system. The installer must also demonstrate that the installed system conforms to the requirements of the Industry Guard DCFSS that are discussed in the Design, Installation, Operation and Maintenance Manual and the requirements of your insurance carrier and any authorities having jurisdiction in your area.

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CHAPTER 2 OPERATION

2-1 INTRODUCTION

This chapter describes the controls and indicators for the Badger® Industry Guard® Dry Chemical Fire Suppression System (DCFSS).

2-2 SYSTEM CONTROLS AND INDICATORS

2-2.1 General

The agent is held in the cylinder by a discharge valve. When the discharge valve is actuated by a control head, the valve piston is displaced and the compressed liquid escapes through the discharge port of the valve and is directed through the distribution piping to the nozzles. The nozzles provide the proper flow rate and distribution of agent.

2-2.2 Universal Control Head

The Universal Control Head is used for actuating the Industry Guard DCFSS Cylinder and Valve Assembly. The Universal Control Head can be attached to the System Valve Actuator for direct cylinder mounting, or to a wall for remote mounting. The controller can be operated with:

- Automatic mechanical and/or electrical detection, and
- Remote and local manual operation.

2-2.3 Instructions in Case of Fire



Do not wait for the system to operate automatically; operate the system manually using remote manual release.

1. Direct personnel to exit protected area and to leave the fire area immediately.
2. Suspend operations in the protected area.
3. Have someone contact the fire department no matter how small the fire appears to be. Post the **fire department number** and **your address** beside each phone. Familiarize yourself with the location of the nearest fire department call box or payphone outside your building in case you must notify the fire department from outside.
4. Ensure all persons have evacuated the fire area and remain safely away.

If your manual control is a remote manual release handle on the system control head, proceed to the location of the manual control. Pull out the locking pin (thus breaking the lead wire seal) and turn the handle clockwise (i.e., in the direction of the arrow). Exit the vicinity of the hazard.

If your manual control is a remote manual release (cable type), proceed to the location of the manual control. Pull out the locking pin (thus breaking the lead wire seal) and use sufficient force to pull the handle straight out. Exit the vicinity of the hazard.

2-3 OPERATIONAL SEQUENCE

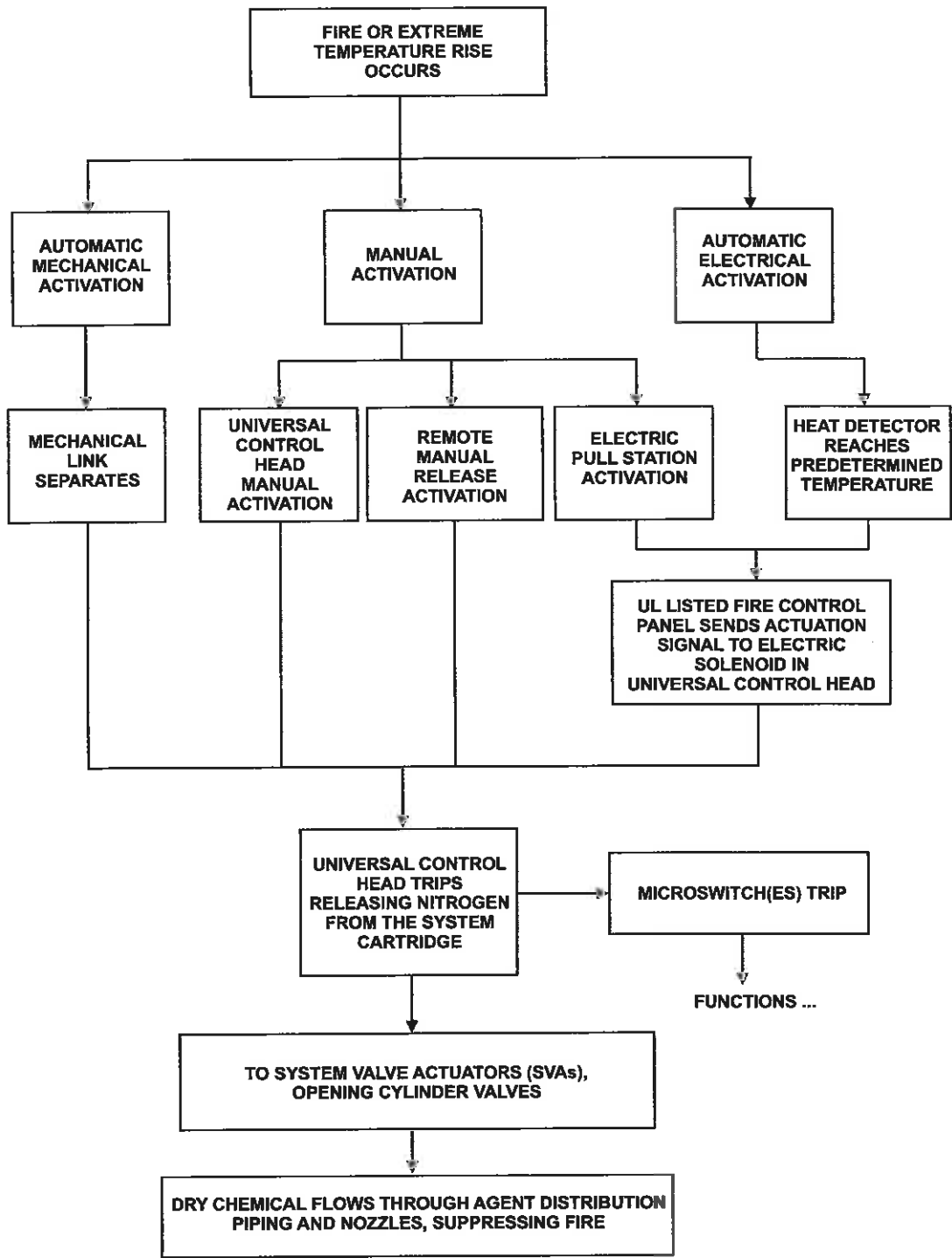


Figure 2-1. Operational Sequence Flow Chart

2-3.1 Post-Fire Operation

After an Industry Guard DCFSS discharge, qualified Badger distributor personnel must perform post-fire maintenance as directed in the Design, Installation, Operation, and Maintenance Manual. Ensure that all warnings and caution in this manual are observed.



- **Do not enter a hazard area with an open flame or lighted smoking materials.**
- **Flammable vapors may cause reignition or explosion.**
- **Ensure the fire is completely extinguished before ventilating the area.**
- **Ventilate the area thoroughly before permitting anyone to enter the hazard area, or use a self-contained breathing apparatus.**

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CHAPTER 3

MAINTENANCE

3-1 INSPECTION AND MAINTENANCE OF YOUR DRY CHEMICAL SYSTEM

Important: The owner of the Badger® Industry Guard® Dry Chemical Fire Suppression System (DCFSS) has the responsibility and duty to comply with these instructions. Failure to do so may result in inadequate system performance, property damage and personal injury.

3-1.1 Monthly Inspection Procedure (by Owner)

Refer to the cylinder nameplate for the proper maintenance instructions. In accordance with NFPA 17 and NFPA 33, make frequent inspections to ascertain that the system is operable. Also, be sure that nothing has occurred which would compromise the effectiveness of the system.

The following procedure is to be performed by the Owner of the system.

Table 3-1. Owner's Monthly Inspection

Check Box	Procedure
<input type="checkbox"/>	Inspect all system components, agent distribution pipe, and conduit runs for physical damage and/or displacement.
<input type="checkbox"/>	Inspect all nozzles to see if protective caps (if applicable) are in place. Check for possible obstructions to the discharge of the dry chemical.
<input type="checkbox"/>	Inspect all detectors (Fusible-links and Thermo-bulbs) for contamination. If contamination is found, contact an authorized Badger Pre-Engineered Distributor for service.
<input type="checkbox"/>	Inspect each Cylinder and Valve Assembly. The pointer on the pressure gauge should be in the "green" range. The cylinder should not show evidence of corrosion or damage.
<input type="checkbox"/>	Ensure manual pull stations are unobstructed and in clear view and labeled for intended use.
<input type="checkbox"/>	Ensure all tamper seals are intact and the system is in a ready condition.
<input type="checkbox"/>	Verify the inspection tag or certificate is in place and current.
<input type="checkbox"/>	A record of the monthly inspection is to be kept reflecting the date inspected, initials of the person performing the inspection, and any corrections required.
<input type="checkbox"/>	If wall mounted, ensure the Universal Control Head is tightly bolted to the wall. If cylinder mounted, ensure the Universal Control Head is tightly bolted to the SVA. The Cam/Flag assembly on the Universal Control Head indicator should point to the 'Set' position. The safety pin and seal wire on the local manual release handle should be in place. If no Remote Manual Release is installed, the path to the local manual release on the cylinder should be clear and unobstructed and within reach.
<input type="checkbox"/>	If any discrepancies are noted while making this inspection, DO NOT CONTINUE OPERATING HAZARDOUS PROCESSES. DO NOT TURN ON PROTECTED EQUIPMENT. Immediately contact an authorized Badger Distributor for service and/or repair.



No other action shall be taken by the system owner other than visual. If further maintenance is determined necessary as a result of owner inspection, contact an authorized Badger Distributor.



Any unauthorized alterations to the protected area or equipment, or to the dry chemical system, can render the fire suppression system ineffective or non-operational. Contact an authorized distributor of Badger Pre-Engineered dry chemical systems if any modifications are contemplated.

3-1.2 Semi-Annual Inspection

The system must be thoroughly inspected on a semi-annual inspection by an authorized Badger distributor.

For more information regarding inspection and maintenance at 6 year and 12 year intervals, contact your Badger distributor.

3-1.3 Your Responsibilities and Related Equipment Requirements

1. Portable fire extinguishers are needed as a backup to the dry chemical system and for areas not protected by this system. Consult with your insurance carrier, local authorities having jurisdiction and your Badger distributor for sizes, types, spacing and location requirements.
2. Read, understand and follow the instructions in this manual. Review these instructions with your employees semi-annually or more frequently. Place this manual in an accessible area near the dry chemical system for ready reference. Post the name, phone number and address of your Badger distributor near your telephone. Also, post the emergency telephone number of the fire department and your address near the telephone.
3. If any condition exists which would render your dry chemical system inoperative or ineffective, **SUSPEND OPERATIONS IN THE PROTECTED AREA IMMEDIATELY.** Have the condition corrected by your authorized Badger distributor before resuming operations.



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Charlottesville, VA 22911
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Fax: (800) 248-7809

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These instructions do not purport to cover all the details or variations in the equipment described, nor do they provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to Badger Fire Protection, Charlottesville, Virginia.

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