I N T E R P R E T I V E M E M O R A N D U M 2000 - 1

To: Licensed Architects
Licensed Engineers
Licensed Fire Alarm Contractors
Licensed Fire Suppression Contractors
Mark Gates, Administrator for Inspections/Arson
Pat Slaughter, Regional Manager of Fire & Safety/Arson
Stephen Gogreve, Regional Manager of Fire & Safety/Arson
Pat Day, Supervisor of Health Care Inspections
Plan Review

From: Jean Carter, Architect Supervisor
Henry Reed, Architect Supervisor
Don Zeringue, Architect Supervisor

Approved by: Jerry W. Jones,
Deputy Assistant Secretary/Chief Architect

Date: January 3, 2000

Re: Location of Suppression Agent Containers and Expellant Gas Assemblies For Local Application and Total Flooding Fire Protection Systems

Please note the following code excerpts, as relating to the location of suppression agent containers (cylinders, spheres, etc.) and expellant gas assemblies:

1993 NFPA 12, Standard On Carbon Dioxide Extinguishing Systems, 1-8.4.1: "Storage containers shall be located as near as possible to the hazard or hazards they protect, but they shall not be located where they will be exposed to a fire or explosion in these hazards." (Scope of standard includes local application and total flooding systems.)

1992 NFPA 12A, Standard On Halon 1301 Fire Extinguishing Systems, 2-1.3.2: "Storage containers shall be located as close as possible to the hazard or hazards they protect, but shall not be exposed to a fire in a manner likely to impair system performance." (Scope of standard includes total flooding systems only.)

1994 NFPA 17, Standard For Dry Chemical Extinguishing Systems, 3-8.3: "The dry chemical

container and expellant gas assemblies shall be located near the hazard or hazards protected, but not where they will be exposed to a fire or explosion in these hazards." (Scope of standard includes local application and total flooding systems.)

1994 NFPA 17A, Standard For Wet Chemical Extinguishing Systems, 3-4.4: "Wet chemical container and expellant gas assemblies shall be located near the hazard or hazards protected but not where they will be exposed to the fire." (Scope of standard includes local application systems only.)

1996 NFPA 2001 Standard On Clean Agent Extinguishing Systems, 2-1.3.2: "Storage containers shall be located as close as possible to or within the hazard or hazards they protect." NFPA 2001, Appendix A-2-1.3.2 further comments, "Storage containers should not be exposed to a fire in a manner likely to impair system performance." (Scope of standard includes total flooding systems only.)

The above code excerpts are performance based requirements, indicating that agent containers/ expellant gas assemblies be located such that they will not be exposed to or adversely affected by a fire (or explosion) within the hazard(s) protected. In an effort to update all previous correspondence and memorandums from this office, pertaining to the location of suppression agent containers and expellant gas assemblies for local application and total flooding, please note the following office interpretations.

Local Application Protection (NFPA 12,17, and 17A)

While not specifically indicated in the codes, this office has previously imposed a minimum three (3) feet separation, between the agent cylinder and expellant gas assemblies, and the hazard protected. This minimum separation is based on our subjective opinion that agent containers and expellant gas assemblies located within three (3) feet of a hood (depending on the hazard protected) could be adversely affected by a fire within the area protected.

This office has not conducted a fire protection engineering analysis on the size of a potential fire from particular cooking appliances. One could argue that a fire occurring on a four burner range would be substantially different than a fire occurring in a deep fat fryer. Therefore, agent container and expellant gas assembly locations with respect to a range as opposed to a deep fat fryer may be justifiably different. Please be advised that we will evaluate such proposals on a case by case basis. Additionally, if the engineer of record specifically requests to be allowed to locate cylinders and expellant gas assemblies closer than three (3) feet, this office will consider the design professional's engineering judgement in the matter. As a general rule, this office will review submittals, for verification that these agent container and expellant gas assemblies are located three (3) feet or more, from the appliance(s) protected. However, the engineer of record may submit documentation supporting a closer location, provided the documentation justifies

that the location will not adversely affect the safety of the agent container and expellant gas assemblies, upon exposure to a fire within the appliance protection area. Also, please understand that this office will accept and allow a submittal containing listing documentation (Underwriters Laboratories, etc.) supporting a separation less than three (3) feet.

Interpretive Determination: For local application protection systems, provide three (3) feet minimum separation between agent cylinder and expellant gas assemblies, and the hazard protected. Fire barrier separation between agent cylinder and expellant gas assemblies, and the hazard protected is not required.

Exception 1. Listed (U.L., etc.) documentation allowing spacing closer that three (3) feet between agent container and expellant gas assemblies, and the hazard.

Total Flooding Protection (NFPA 12, 12A, 17, and 2001)

While not specifically indicated in the codes, this office previously imposed an interpretive memorandum (12-27-96) prohibiting the placement of total flooding cylinders within the protected area, unless the cylinders would be protected so as to limit the possibility that the initiation of fire would damage the cylinders before operation. For example, NFPA 2001: 2-1.3.2 intends to prohibit the agent cylinders from being located in a manner such that they would be damaged by a fire and thus be rendered inoperable before the system could discharge to extinguish a fire. Subsequent to our previous determination, we have learned that the NFPA 2001 Committee recognizes that most Class A fire hazard environments, such as computer rooms and telecommunications rooms, do not present the described potential (of a fire damaging the cylinders causing them to fail prior to discharge), provided there is a reasonable distance of separation between the cylinders and any accumulations of Class A combustibles. The committee did not intend to prohibit agent containers from being within the protected area in such ordinary hazard environments, nor did it intend to require them to be separated by fire rated construction.

However, the committee did intend to prohibit agent containers from being located within the protected area, where a high hazard exists, such as a flammable liquids storage room, or diesel driven generator room. If a fire could develop so rapidly that the agent containers are compromised before agent discharge occurs, then the containers should be located outside the protected space.

Interpretive Determination for Total Flooding Systems Protecting Areas with Low and/or Ordinary Hazards: Provide three (3) feet minimum separation between agent container and expellant gas assemblies, and any/all accumulations of Class A combustibles. Warning signs shall be posted at each agent cylinder stating, "WARNING: DO NOT PLACE ANY TYPE OF COMBUSTIBLES OR POTENTIAL FIRE HAZARD WITHIN THREE FEET OF THIS FIRE

SUPPRESSION AGENT CONTAINER". Fire barrier separation between agent cylinder and expellant gas assemblies, and area protected is not required. See NFPA 101:4-2.2.2 and 4-2.2.3 for definitions of Low and Ordinary Hazard.

Interpretive Determination for Total Flooding Systems Protecting Areas with High Hazards: Separate agent container and expellant gas assemblies from hazard(s) protected, by a minimum one (1) hour fire barrier, pursuant to NFPA 101:6-4.1.1. See NFPA 101:4-2.2.4 for definition of High Hazard.

Please understand that other types of special protection needs for suppression agent containers and expellant gas assemblies not discussed above (such as hazards due to explosion, special mechanical or chemical conditions, adverse weather, etc.) shall be reviewed by this office on a "per project" basis.

JCC/JWJ/jcc

Cc: Marc Reech, Executive Staff Officer