3.3 General Definitions.
3.3.1 Alternative Fuels.
Solid fuels such as municipal solid waste (MSW), refuse derived fuel (RDF), biomass, rubber tires, and other combustibles that are used instead of fossil fuels (gas, oil, or coal) in a boiler to produce steam for the generation of electrical energy.
3.3.2 Biomass.
A boiler fuel manufactured by means of a process that includes storing, shredding, classifying, and conveying of forest and agricultural byproducts (e.g., wood chips, rice hulls, sugar cane).
3.3.3 Combustible.
Capable of undergoing combustion.
3.3.4 Combustible Material.
A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible.
3.3.5 Compressed Air Foam (CAF).
A homogenous foam produced by the combination of water, foam concentrate, and air or nitrogen under pressure.
3.3.6 Fast Depressurization System.
A passive mechanical system designed to depressurize the transformer a few milliseconds after the occurrence of an electrical fault.
3.3.7 Fire Area.
An area that is physically separated from other areas by space, barriers, walls, or other means in order to contain fire within that area.
3.3.8 Fire Barrier.
A continuous membrane or a membrane with discontinuities created by protected openings with a specified fire protection rating, where such membrane is designed and constructed with a specified fire resistance rating to limit the spread of fire, that also restricts the movement of smoke. [101, 2015]
3.3.9 Fire Loading.
The amount of combustibles present in a given area, expressed in Btu/ft² (kJ/m²).
3.3.10 Fire Point.
The lowest temperature at which a liquid will ignite and achieve sustained burning when exposed to a test flame in accordance with ASTM D 92, Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester. [30, 2015]
3.3.11 Fire Prevention.
Measures directed toward avoiding the inception of fire. [801, 2014]
3.3.12 Fire Protection.
Methods of providing for fire control or fire extinguishment. [801, 2014]
3.3.13 Fire Rated Penetration Seal.
An opening in a fire barrier for the passage of pipe, cable, duct, and so forth, that has been sealed to maintain a barrier rating.
3.3.14 Fire Risk Evaluation.
An evaluation of the plant-specific considerations regarding design, layout, and anticipated operating requirements. The evaluation should result in a list of recommended fire prevention features to be provided based on acceptable means for separation or control of common and special hazards, the control or elimination of ignition sources, and the suppression of fires.
3.3.15 Fluid.
3.3.15.1 Fire-Resistant Fluid.
A listed hydraulic fluid or lubricant that is difficult to ignite due to its high fire point and autoignition temperature and that does not sustain combustion due to its low heat of combustion.
3.3.15.2 Nonflammable Fluid.
A nonflammable dielectric fluid that does not have a flash point and is not flammable in air.

3.3.16 Fossil Fueled.
Fuel containing chemical energy, which has been formed from animal and plant matter over many years (i.e., oil, coal, and natural gas) that are used in a boiler to produce steam for the generation of electrical energy.

3.3.17 High Voltage Direct Current (HVDC) Converter Station.
A facility that functions as an electrical rectifier (ac-dc) or an inverter (dc-ac) to control and transmit power in a high voltage network. There are two types of HVDC valves — the mercury arc valve and the present-day technology solid state thyristor valve. Both types of valves present a fire risk due to high voltage equipment that consists of oil-filled converter transformers, wall bushings, and capacitors in addition to various polymeric components.

3.3.18 Interior Finish.
The exposed surfaces of walls, ceilings, and floors within buildings.

3.3.18.1 Class A Interior Finish.
Materials having a flame spread index of 0–25, and a smoke developed index of 0–450 when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Test for Surface Burning Characteristics of Building Materials. Includes any material with a flame spread index of 25 or less and with a smoke developed index of 450 or less when any element thereof, when tested, does not continue to propagate fire.

3.3.18.2 Class B Interior Finish.
Materials having a flame spread index of 26–75, and a smoke developed index of 0–450 when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Test for Surface Burning Characteristics of Building Materials. Includes any material with a flame spread index of 26 or more but not more than 75 and with a smoke developed index of 450 or less.

3.3.19 Limited Combustible.
A building construction material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 8141 kJ/kg (3500 Btu/lb), where tested in accordance with NFPA 259, Standard Test Method for Potential Heat of Building Materials, and complies with (a) or (b): (a) materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 3.2 mm (0.127 in.) that has a flame spread index not greater than 50; and (b) materials, in the form and thickness used, other than as described in (a), having neither a flame spread index greater than 25 nor evidence of continued progressive combustion and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor evidence of continued progressive combustion. (Materials subject to increase in combustibility or flame spread index beyond the limits herein established through the effects of age, moisture, or other atmospheric condition shall be considered combustible.)

3.3.20 Liquid.

3.3.20.1 Combustible Liquid.
Any liquid that has a closed-cup flash point at or above 100°F (37.8°C). (See NFPA 30, Flammable and Combustible Liquids Code.)

3.3.20.2 Flammable Liquid.
A liquid that has a closed-cup flash point that is below 100°F (37.8°C) and a maximum vapor pressure of 40 psia (2068 mm Hg) at 100°F (37.8°C).

3.3.20.3 High Fire Point Liquid.
A combustible dielectric liquid listed as having a fire point of not less than 572°F (300°C).

3.3.20.4 Less Flammable Liquid.
A combustible dielectric liquid listed as having a fire point of not less than 572°F (300°C).

3.3.21 Mass Burn.
A process in which municipal solid waste is hauled directly to a tipping floor or storage pit and then is used as a boiler fuel without any special processing.
3.3.22 Municipal Solid Waste (MSW).
Solid waste materials consisting of commonly occurring residential and light commercial waste.

3.3.22.1 Charging Floor - (important - there are requirements specific for charging floor areas but it is never defined). My personal opinion is that it should be replaced with "MSW Non-Pit, On-Floor Storage Area"

3.3.22.2 Grapple Laydown Area - (only if you keep it - see suggested area classifications in public comment #12)

3.3.22.3 Non-Pit, On-Floor Storage - need to define this to avoid confusion between it and a tipping/receiving floor where material is allowed to accumulate.

3.3.22.4 MSW Storage Pit - need to define this to minimize confusion between it and non-pit, on-floor storage areas

3.3.22.4.1 Tipping/Receiving Building - important - there are requirements specific for "Tipping/Receiving Building" but it is never defined. The definition needs to be worded in a way to minimize confusion between it and and a non-pit, on-floor storage area. Also, it would probably be better to call it "Tipping/Receiving Area" (instead of building) here AND elsewhere in the standard because it is not always a separate building and (I believe) the requirements still apply.

3.3.23 Noncombustible.
A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire. Materials when tested in accordance with ASTM E 136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, and conforming to the criteria contained in Section 7 of the referenced standard are considered noncombustible.

3.3.24 Rating.
3.3.24.1 Fire Protection Rating.
The time, in minutes or hours, that materials and assemblies used as opening protection have withstood a fire exposure as established in accordance with test procedures of NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, and NFPA 257, *Standard on Fire Test for Window and Glass Block Assemblies*, as applicable.

3.3.24.2 Fire Resistance Rating.
The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as determined by the tests, or methods based on tests, as prescribed in NFPA 5000, *Building Construction and Safety Code*, [5000, 2015]

3.3.25 Refuse Derived Fuel (RDF).
A boiler fuel manufactured by means of a process that includes storing, shredding, classifying, and conveying of municipal solid waste.

3.3.26 Stakeholder.
An individual, a group of individuals, or an organization that is perceived to affect or be affected by the fire hazards associated with the facility being evaluated. Stakeholders include all those who have a financial, personnel safety, public safety, or regulatory interest in the fire risk, such as the public (e.g., neighbors, community groups, first responders), employees, owner/investor(s), operator, insurer, regulator(s), and design team.

**Statement of Problem and Substantiation for Public Comment**

Proposed changes will minimize confusion in the application of the document.

**Submitter Information Verification**

Submitter Full Name: WILLIAM PUCCI
Organization: PERFORMANCE CONSULTANTS, INC
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Mon Nov 11 10:03:06 EST 2013
## Committee Statement

<table>
<thead>
<tr>
<th>Committee Action:</th>
<th>Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution:</td>
<td>This is new material. The submitter did not provide specific language to be used and the current terms are understood in the industry.</td>
</tr>
</tbody>
</table>
3.3.23 Noncombustible.

A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire. Materials when tested in accordance with ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, and conforming to the criteria contained in Section 7 of the referenced standard are considered noncombustible. Not capable of supporting combustion.

Statement of Problem and Substantiation for Public Comment

I am a member of the Glossary of Terms Task Group (GOT). The proposed definition is used by many other standards, and is the same definition in Websters Dictionary. Having common definitions across NFPA standards, where appropriate, is the goal of the GOT.

Submitter Information Verification

Submitter Full Name: Jack McNamara
Organization: Bosch Security Systems
Affiliation: GOT
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Sun Oct 27 15:46:38 EDT 2013

Committee Statement

Committee Action: Rejected
Resolution: This is new material. Additionally, the current definition is in the glossary of terms along with several other definitions of the term noncombustible.
### Public Comment No. 2-NFPA 850-2013 [Section No. 7.2.4]

#### 7.2.4 Inerting.

Prior to introducing fuel gas to, or removing fuel gas from, the fuel gas piping, inerting should be performed.

### Statement of Problem and Substantiation for Public Comment

Specifying inerting for the introduction of fuel gas into the system only addresses half of the risk, there is an equal risk when removing the fuel gas from the system if air is used to expel the gas.

### Submitter Information Verification

**Submitter Full Name:** Lawrence Danner  
**Organization:** GE Power and Water  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Wed Sep 25 07:42:28 EDT 2013

### Committee Statement

**Committee Action:** Accepted  
**Resolution:** SR-1-NFPA 850-2014  
**Statement:** Specifying inerting for the introduction of fuel gas into the system only addresses half of the risk, there is an equal risk when removing the fuel gas from the system if air is used to expel the gas.
7.2.4*  Inerting.
Prior to introducing fuel gas to, or removing fuel gas from, the fuel gas piping, inerting should be performed.

Submitter Information Verification

Submitter Full Name: [ Not Specified ]
Organization: [ Not Specified ]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Mar 18 17:27:39 EDT 2014

Committee Statement

Committee Statement: Specifying inerting for the introduction of fuel gas into the system only addresses half of the risk, there is an equal risk when removing the fuel gas from the system if air is used to expel the gas.
Response Message:
Public Comment No. 2-NFPA 850-2013 [Section No. 7.2.4]
7.2.5 * Maintenance, and, Modification and Repair.

The hazards associated with flammable gases, including those hazards arising from toxic constituents in the gas, and asphyxiants, should be considered when performing maintenance, and, modifications or repairs.

7.2.5.1 Fuel gas piping should be inerted in accordance with 7.2.4 prior to maintenance, and, modification or repair.

7.2.5.2 When performing maintenance, modification or repair of piping that contains a flammable gas which has toxic constituents, or when inerting fuel gas piping with asphyxiants, the area should be ventilated or considered a confined space as regulated by U.S. Department of Labor, OSHA 29 CFR 1910.146, “Permit Required Confined Space Standard.”

Statement of Problem and Substantiation for Public Comment

Planned system modifications can introduce even more hazards than basic maintenance or repairs and should be recognized. Additionally, there is an increasing use of alternate fuel gas sources (for example: biogas, mine gas and syngas) which can contain significant quantities of toxic constituents such as Carbon Monoxide and Hydrogen Sulfide. Recognizing these additional hazards is essential to assure worker safety.

Submitter Information Verification

Submitter Full Name: Lawrence Danner
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Submittal Date: Wed Sep 25 08:22:03 EDT 2013

Committee Statement

Committee Action: Accepted
Resolution: SR-2-NFPA 850-2014
Statement: Planned system modifications can introduce even more hazards than basic maintenance or repairs and should be recognized. Additionally, there is an increasing use of alternate fuel gas sources (for example: biogas, mine gas and syngas) which can contain significant quantities of toxic constituents such as Carbon Monoxide and Hydrogen Sulfide. Recognizing these additional hazards is essential to assure worker safety.
7.2.5 Maintenance, Modification, and Repair.

The hazards associated with flammable gases, including those hazards arising from toxic constituents in the gas and asphyxiants, should be considered when performing maintenance and modifications, or repairs.

7.2.5.1 Fuel gas piping should be inerted in accordance with 7.2.4 prior to maintenance and modifications, or repair.

7.2.5.2 When performing maintenance, modification, or repair of piping that contains a flammable gas that has toxic constituents, or when inerting fuel gas piping with asphyxiants, the area should be ventilated or considered a confined space as regulated by U.S. Department of Labor, OSHA 29 CFR 1910.146, “Permit Required Confined Space Standard.”

Submitter Information Verification

Submitter Full Name: [Not Specified]
Organization: [Not Specified]
Street Address: [Not Specified]
City: [Not Specified]
State: [Not Specified]
Zip: [Not Specified]
Submittal Date: Tue Mar 18 17:29:42 EDT 2014

Committee Statement

Planned system modifications can introduce even more hazards than basic maintenance or repairs and should be recognized. Additionally, there is an increasing use of alternate fuel gas sources (for example: biogas, mine gas and syngas) which can contain significant quantities of toxic constituents such as Carbon Monoxide and Hydrogen Sulfide. Recognizing these additional hazards is essential to assure worker safety.

Response Message:

Public Comment No. 8-NFPA 850-2013 [Section No. 7.2.5]
Public Comment No. 12-NFPA 850-2013 [Section No. 9.3.3.1]

9.3.3.1 The tipping/receiving building should be provided with automatic sprinkler protection throughout. Systems should be designed for a minimum of 0.25 gpm/ft² (10.2 mm/min) over the most remote 3000 ft² (279 m²) (increase by 30 percent for dry pipe systems) of floor area with the protection area per sprinkler not to exceed 130 ft² (12 m²). High-temperature sprinklers [250°F to 300°F (121°C to 149°C)] should be used. If the tipping/receiving floor is to be used as the charging storage area, additional protection should be provided in accordance with 9.3.3.2.2.

(There needs to be more info here. For starters, none of the referenced terms are defined (see proposed changes to definitions section of the document).

Next, why use the word "building"? Most tipping/receiving areas are part of a building that has other purposes. Suggest changing "tipping/receiving building" to "tipping/receiving area" throughout.

The last sentence implies that if you store material on the tipping floor then sprinklers and hose stations alone aren’t good enough. Why the increased density for the tipping/receiving floor then (when compared to the pit - 0.25 vs 0.20)? You’ve provided a basis for the 0.25 over 3000 criteria in (the proposed new) section A.9.3.3.1. Isn’t the intention that you are expecting to be able to control a fire in Class III commodities to 20 ft with that design density and area? Also, it should be noted that in section 9.3.3.2.1 it is stated that monitor nozzles are needed "due to the distance between the bottom of the pit and the sprinkler system". So is it the ceiling height or the mere presence of combustible material that drives the requirement for monitor nozzles?

It is my feeling that more time needs to be spent defining the different types of areas that may be present and then specifying the requirements for each area (and what the expectations are for each set of design criteria). There are too many gaps and overlaps and it invites confusion.

Suggestions for Area Classifications:

Tipping/Receiving Area (with specific statements regarding whether or not material is allowed to be stored there, and if so how much and for how long.

Storage Pit (ideally with some sort of minimum size and minimum floor-to-ceiling distance)

Non-Pit, On-Floor Storage Area (i.e. use in place of "charging area")

Then for each area you can state sprinkler system design densities and areas (with basis), performance objectives (fire control, structure protection, etc.) requirements for monitor nozzles, etc.

Statement of Problem and Substantiation for Public Comment

Proposed changes will reduce confusion in the application of the document.

Submitter Information Verification

Submitter Full Name: WILLIAM PUCCI
Organization: PERFORMANCE CONSULTANTS, INC
Street Address:
City:
State:
Zip:
Submittal Date: Mon Nov 11 10:44:33 EST 2013

Committee Statement

Committee Rejected
| **Action:** |  |
| **Resolution:** | The submitter did not provide specific language to be used and the current terms are understood within the industry. |
Second Revision No. 5-NFPA 850-2014 [ Section No. 16.6.2 ]

16.6.2
Tarpaulins and plastic films should be of listed weather-resistant and fire-retardant materials. (See materials and meet the performance criteria of NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.)

Submitter Information Verification

Submitter Full Name: [ Not Specified ]
Organization: [ Not Specified ]
Street Address: 
City: 
State: 
Zip: 
Submittal Date: Tue Mar 18 18:37:01 EDT 2014

Committee Statement

Committee Statement: The editorial change has been made to align the recommendation with NFPA 701 and the intent of PC#7 to NFPA 851 which is now part of NFPA 850.

Response Message:
A.7.2.4

It is often recommended that oxidants, such as air, within a flammable gas system be diluted by a nonreactive (inert) gas such as nitrogen, carbon dioxide, or argon to levels so low that when a flammable gas is introduced, a flammable mixture is not generated. This is known as "Purging into Service". The reverse is also true: dilute the fuel before adding air. This is known as "Purging Out of Service". Flammability ranges for various fuels are noted as part of Table 4.4.2 of NFPA 497, Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas. While this addresses fire hazards, if the nonreactive gas is an asphyxiant, and proper cautions are to be followed. This best practice is discussed at length in CGA G-5.6, Section 8.11.3.

NFPA 56, Chapters 7 and 8 outline the best practices for "Purging into Service" and "Purging Out of Service" respectively to include the best practice for discharging the contents of the system during the purging operations. Other considerations such as activity planning and risk assessment are provided in NFPA 56, Chapter 4. Additionally consideration must be given to any toxic hazards associated with the flammable gas (e.g., flammable gas mixtures that contain toxic constituents such as Carbon Monoxide or Hydrogen Sulfide). NFPA 55 contains guidance for how to handle these situations.

Statement of Problem and Substantiation for Public Comment

Although CGA G-5.6 has excellent guidance for purging "oxidants like air" out of piping system with an "inert" media prior to introducing flammable and for diluting the fuel prior to introducing air, the document is specific to Hydrogen Gas and fails to cover other aspects of such operations.

A reference to NFPA 56 is more appropriate as it includes overall guidance on the topic with specific procedural guidance in Chapters 7 and 8. Additionally, NFPA 56 recognizes that situations requiring such purging activities may be complicated by such factors as potentially toxic flammables, various local restrictions or plant design factors, and outlines the necessary risk assessment and written procedure development required to assure the safe removal from / introduction of flammable gas within piping systems considering all the variables that may exist in Chapter 4. The Chapter 4 information augments the information in NFPA 55 that outlines special considerations for gases that have toxic properties.

Submitter Information Verification

Submitter Full Name: Lawrence Danner
Organization: GE Power and Water
Street Address:
City:
State:
Zip:
Submittal Date: Tue Sep 24 15:54:10 EDT 2013

Committee Statement

Committee Action: Accepted
Resolution: SR-3-NFPA 850-2014
Statement: Although CGA G-5.6 has excellent guidance for purging "oxidants like air" out of piping system with an "inert" media prior to introducing flammable and for diluting the fuel prior to introducing air, the document is specific to Hydrogen Gas and fails to cover other aspects of such operations.

A reference to NFPA 56 is more appropriate as it includes overall guidance on the topic with specific procedural guidance in Chapters 7 and 8. Additionally, NFPA 56 recognizes that situations requiring
such purging activities may be complicated by such factors as potentially toxic flammables, various local restrictions or plant design factors, and outlines the necessary risk assessment and written procedure development required to assure the safe removal from / introduction of flammable gas within piping systems considering all the variables that may exist in Chapter 4. The Chapter 4 information augments the information in NFPA 55 that outlines special considerations for gases that have toxic properties.
Second Revision No. 3-NFPA 850-2014 [Section No. A.7.2.4]

A.7.2.4
It is often recommended that oxidants like air such as air within a flammable gas system be diluted by a nonreactive (inert) gas such as nitrogen, carbon dioxide, or argon to levels to low concentrations so that when a flammable gas is introduced, a flammable mixture an ignitable mixture is not generated created within the system. This is known as purging into service. The reverse is also true: dilute the fuel before adding air, which is known as purging out of service. Flammability ranges for various fuels are noted as part of Table 4.4.2 of NFPA 497, Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas. While this table addresses fire hazards, if the nonreactive gas is an asphyxiant, and proper cautions are to be followed. This best practice is discussed at length in CGA G-5.6, Section 8.11.3. Chapters 7 and 8 of NFPA 56 outline best practices for purging into service and purging out of service, respectively, to include the best practice for discharging the contents of the system during the purging operations.

Other considerations such as activity planning and risk assessment are provided in Chapter 4 of NFPA 56. Additionally, consideration must be given to any toxic hazards associated with the flammable gas (e.g., flammable gas mixtures that contain toxic constituents such as carbon monoxide or hydrogen sulfide). NFPA 55 contains guidance for how to handle these situations.

Submitter Information Verification
Submitter Full Name: [Not Specified]
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Mar 18 17:32:32 EDT 2014

Committee Statement
Committee Statement: Although CGA G-5.6 has excellent guidance for purging “oxidants like air” out of piping system with an “inert” media prior to introducing flammable and for diluting the fuel prior to introducing air, the document is specific to Hydrogen Gas and fails to cover other aspects of such operations.

A reference to NFPA 56 is more appropriate as it includes overall guidance on the topic with specific procedural guidance in Chapters 7 and 8. Additionally, NFPA 56 recognizes that situations requiring such purging activities may be complicated by such factors as potentially toxic flammables, various local restrictions or plant design factors, and outlines the necessary risk assessment and written procedure development required to assure the safe removal from/ introduction of flammable gas within piping systems considering all the variables that may exist in Chapter 4. The Chapter 4 information augments the information in NFPA 55 that outlines special considerations for gases that have toxic properties.

Response Message:
Public Comment No. 1-NFPA 850-2013 [Section No. A.7.2.4]
A.7.2.5 Maintenance, modification and repair of fuel gas piping should be performed in accordance with Section 9.8.2 of CGA G-5.6 using written procedures developed with full recognition of the hazards involved in the intended operation. NFPA 56, Chapter 4 provides an outline of considerations to include in assessing the risks associated with flammable gas piping when planning for maintenance modification or repair. Chapters 7 and 8 provide specific guidance for the actual removal or induction of flammable gas. NFPA 55 provides additional guidance for gases that have toxic constituents.

Statement of Problem and Substantiation for Public Comment

A reference to the Hydrogen specific CGA G-5.6 document is not the best choice in this situation. Maintenance, modification and repair of flammable gas piping systems should always be conducted to written procedures that are developed based on an understanding of the overall effort and a risk assessment to identify all the potential hazards with the necessary steps to assure the hazards are properly controlled during the maintenance process. A key tenant of doing maintenance safely is assuring the written procedures are sensitive to modifications made to the system via a proper Management of Change process. NFPA 56 Chapter 4 guidance was written to assure the safety of persons working on all flammable gas piping systems and includes guidance on Management of Change consideration when modifications are made.

Submitter Information Verification

Submitter Full Name: Lawrence Danner
Organization: GE Power and Water
Street Address:
City:
State:
Zip:
Submittal Date: Wed Sep 25 08:13:21 EDT 2013

Committee Statement

Committee Action: Accepted
Resolution: SR-4-NFPA 850-2014
Statement: A reference to the Hydrogen specific CGA G-5.6 document is not the best choice in this situation. Maintenance, modification and repair of flammable gas piping systems should always be conducted to written procedures that are developed based on an understanding of the overall effort and a risk assessment to identify all the potential hazards with the necessary steps to assure the hazards are properly controlled during the maintenance process. A key tenant of doing maintenance safely is assuring the written procedures are sensitive to modifications made to the system via a proper Management of Change process. NFPA 56 Chapter 4 guidance was written to assure the safety of persons working on all flammable gas piping systems and includes guidance on Management of Change consideration when modifications are made.
A.7.2.5 Maintenance, modification, and repair of fuel gas piping should be performed in accordance with Section 9.8.2 of CGA G-5.6 using written procedures developed with full recognition of the hazards involved in the intended operation. Chapter 4 of NFPA 56 provides an outline of considerations to include in assessing the risks associated with flammable gas piping when planning for maintenance modification or repair. Chapters 7 and 8 of NFPA 56 provide specific guidance for the actual removal or induction of flammable gas. NFPA 55 provides additional guidance for gases that have toxic constituents.

Submitter Information Verification

Submitter Full Name: [ Not Specified ]
Organization: [ Not Specified ]
Street Address: [ Not Specified ]
City:
State:
Zip:
Submittal Date: Tue Mar 18 17:34:53 EDT 2014

Committee Statement

Committee Statement: A reference to the Hydrogen specific CGA G-5.6 document is not the best choice in this situation. Maintenance, modification and repair of flammable gas piping systems should always be conducted to written procedures that are developed based on an understanding of the overall effort and a risk assessment to identify all the potential hazards with the necessary steps to assure the hazards are properly controlled during the maintenance process. A key tenant of doing maintenance safely is assuring the written procedures are sensitive to modifications made to the system via a proper Management of Change process. NFPA 56 Chapter 4 guidance was written to assure the safety of persons working on all flammable gas piping systems and includes guidance on Management of Change consideration when modifications are made.

Response Message:
Public Comment No. 7-NFPA 850-2013 [Section No. A.7.2.5]
A.7.7.4.6
There is limited information available detailing industry experience with fire-resistant fluids as turbine lubrication oils or in seal oil systems. The use of fire-resistant fluids in hydraulic systems is common in the utility industry. Literature is available documenting use of these fluids in Europe. Information detailing operational experience using fire-resistant fluids on lubrication oil systems on turbine-generators in North America is limited.

Utilizing a listed fire-resistant turbine lubricating oil potentially reduces the hazard associated with the lubricating oil system, but the remaining hazards still need to be addressed in determining the appropriate suppression systems and design densities needed in these areas (i.e., grouped cables and other mineral oil–based lubricating systems).

Given the fact that fire-resistant fluid still has the ability to burn, care should be exercised in selecting the fluid. When selecting the fluid, consideration should be given to the fluid's heat release rate, fire point, and ability to sustain a spray or cascading fire once the ignition source is removed. The autoignition temperature of the fluid used should be sufficient to minimize the potential for a fire based on common ignition and heat sources located in the turbine generator area.

Submitter Information Verification

Submitter Full Name: [Not Specified]
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Wed Mar 19 11:40:44 EDT 2014

Committee Statement

Committee Statement: Further guidance was needed regarding the use of fire resistant fluids.
Response Message:
A.9.3.3.1
The requirements are based on storage heights not exceeding 20 ft (6.1 m).

The specified density was based on a composition of 34 percent paper, 17 percent food waste, 8 percent plastic and rubber, 10 percent glass, 11 percent metal, 14 percent leaves and grass. Solid pile storage was used. The compositions were based on Factory Mutual data available at the time (1989) on the breakdown of MSW, and it was decided that they were most closely represented by a Class III commodity. Utilizing Figure 6-1.2(a) from the (1990?) edition of NFPA 231 "General Storage", along with a storage height of 20 ft (6.1 m), was used. This resulted in selecting a Class III commodity (.22/3000) for 20 ft. The decision was made to... this resulted in baseline design criteria of .22 gpm/sq ft over 3000 sq ft. The decisions to increase the density to .25/3000 and to recommend high temperature sprinklers were done afterwards (to be conservative) and were not specifically tied to any specific combination of commodity classification, storage height and/or design density at the time. (This is important for users to understand if they try to decide what densities to use for other heights & commodity mixes).

If the mix is different from above, consult NFPA 13, Standard for the Installation of Sprinkler Systems.

Statement of Problem and Substantiation for Public Comment

Proposed changes will reduce confusion in the application of the document.

Submitter Information Verification

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Committee Statement

Committee Action: Rejected
Resolution: The class III recommendation is a basis for design based on composition. If the composition varies from that described in A.9.3.3.1, section 4.3.2 recommends a risk assessment to define the design requirements.