1 Scope

1.1 This technical report is informative and does not contain any mandatory requirements.

1.2 This technical report is intended to be used in conjunction with other good engineering practices applicable to FGS installations. It is not intended to stand alone or be a replacement for application-specific practices.

1.3 This technical report acknowledges but does not address mitigative effectiveness associated with notification appliances and personnel response requirements.

1.4 This technical report is intended to:

- Be used by those with a thorough understanding of ANSI/ISA-84.00.01-2004.
- Clarify the additional information that should be considered when developing a performance-based FGS design. This includes development of a safety lifecycle model for FGS design and management.
- Clarify how to define FGS functions within typical FGS designs where automatic action is taken as a result of detection of a fire or gas event.
- Provide example scenario assessments to demonstrate the application of performance-based concepts to the analysis and design of FGS.

2 References

2.1 ANSI/ISA-84.00.01-2004 (IEC 61511 Mod), *Functional Safety: Safety Instrumented Systems for the Process Industry Sector,* Parts 1, 2 & 3, International Society of Automation, Research Triangle Park, NC, 2004.

2.2 NFPA 72, National Fire Alarm Code, National Fire Protection Association, 2007.

2.3 EN 54-2: 1997 Fire Detection and Fire Alarm Systems Part 2: Control and Indicating Equipment.

2.4 HSE Offshore Fire and Explosion Strategy – Issue 1; http://www.hse.gov.uk/offshore/strategy/fgdetect.htm.

2.5 CCPS/AIChE, Layer of Protection Analysis: Simplified Process Risk Assessment, First Edition, New York, 2001.

2.6 CCPS/AIChE, Guidelines for Chemical Process Quantitative Risk Analysis, Second Edition, New York, 2000.

2.7 ANSI/ISA-TR84.00.02, *Safety Instrumented Systems (SIS) – Safety Integrity Level (SIL) Evaluation Techniques*, International Society of Automation, Research Triangle Park, NC, 2002.

2.8 IEC 61511 *Functional Safety: Safety Instrumented Systems for the Process Industry Sector*, Parts 1, 2 & 3.

3 Abbreviations and Acronyms

1ooN – One out of N Voting

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