



DOES NOT CONTAIN UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

Reviewing Official: Jacqueline Bustamante, PPI-2
 Date: 04/24/2024
 Guidance Used: CG-SS-5, 7/22/2016, DOE-OC

Form 2176

Conduct of Engineering Formal Clarification or Interpretation Request

Assigned by Responder: Clarification Interpretation Tracking number **CIR-24-006**

Clarify	To make the CoE document or its references understandable and free from confusion
Interpret	To formally provide an acceptable method of compliance with the document or references

1.0 Request

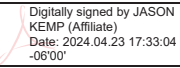
Brief Title: Need for Hydraulic Calculation			
Affected Document Title, Number, and Rev. No. ESM, Chapter 2 – Fire Protection, D40GEN, Administration and General Requirements, Rev. 7			
Section/Article/Para and Existing Wording 5.6 Calculations, B.4., Hydraulic calculations shall be provided for modifications to existing systems that do not match the same piping configuration (e.g., tree, side-side, looped, or gridded), pipe sizes for mains and branch lines, and number and arrangement of sprinkler heads in the piping network.			
Inquiry (describe ambiguity or issue) The above wording implies that a hydraulic calculation is not required for simple fire suppression modifications that do not affect system configuration (e.g., tree, side-side, looped, or gridded), pipe sizes for mains and branch lines, and number and arrangement of sprinkler heads in the piping network. Please confirm that no supporting hydraulic calculation is required for the relocation of existing system sprinkler heads that do not affect the pipe sizing of system mains and/or branch lines.			
Requestor (LANL employee) Jason Apperson	Z Number 222827	Organization LI-PROJ	Date 4/23/24

2.0 Response by Safety (or Security) Management Program Owner Representative (SMPOR/POC)

The requestor's interpretation is correct though the determination depends on factors than pipe size. Hydraulic calculations establish the bounds for the system layout at the most remote area and the remainder of the system is configured the same. If a future modification matches the system layout established by the original design's hydraulic calculation, an updated hydraulic calculation is <i>not</i> required. Modifications to systems that increase friction loss or discharge flow significantly or are simply different than the established layout and not validated do require hydraulic calculations. Relocation of sprinkler heads would not require hydraulic calculations, if the friction losses for the relocated sprinkler head arm overs and drops are close to what is found in the original system within an acceptable margin (e.g., 0.1 psi). The decision as to whether hydraulic calculations are required must have input from the fire protection engineer (FPE) overseeing the project, since the exact reconfiguration details may affect the hydraulic performance in unexpected ways. The FPE could suggest piping layout changes that would result in something hydraulically similar to the existing system, e.g., using 1-1/4" pipe for extended arm-overs.			
Name Keenan Dotson	Z Number 330603	Signature KEENAN DOTSON (Affiliate) <small>Digitally signed by KEENAN DOTSON (Affiliate) Date: 2024.04.23 17:15:28 -0600</small>	Date 4/23/24

3.0 SMPO Approval (Standards Manual and code and regulation matters only, otherwise N/A)

Comments: No Additional Comments

Name Jason Kemp	Z Number 153111	Signature JASON KEMP (Affiliate)	 Digitally signed by JASON KEMP (Affiliate) Date: 2024.04.23 17:33:04 -06'00'	Date 4-23-2024
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Distribution (may be electronic): Requestor, SMPOR, SMPO, CENG-OFF Program POC