

Fire Engineering Justification

SBC 201 Sections 901, 903 and 904: Clean-Agent Systems, Sprinkler-Protected Building Status, and Telecommunications / IT Equipment Rooms

Prepared for	Knowledge Sharing
Purpose	This report es on the correct technical interpretation of SBC 201 Sections 901, 903 and 904, with additional reference to NFPA 13, NFPA 75, NFPA 76, NFPA 2001 and the NFPA Fire Protection Handbook.
Principal issue	An interpretation that the use of a clean-agent system in lieu of sprinklers prevents the building from being treated as sprinkler protected building.
Prepared date	10 th May 2026
Summarized technical position	
Do not treat every clean-agent protected room as automatically defeating the sprinkler-protected status of the whole building. The proper test is why sprinklers are omitted from that room: permitted omission under SBC 201 Section 903 / NFPA 13, or substitution by an alternative fire-extinguishing system under SBC 201 Section 904. Those are materially different code routes.	

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1. Purpose and issue for determination

To provide a clear technical basis to anyone's position that, where a clean-agent system is used instead of sprinklers in selected rooms, the building can no longer be regarded as sprinkler protected.

That position is too broad. SBC 201 does not support a blanket conclusion that the mere presence of a clean-agent system in a room removes the sprinkler-protected status of the entire building. The correct analysis is clause-specific and room-specific. The design fire engineering should be assessed based on:

- a permitted sprinkler omission under Section 903 / NFPA 13, with the required detection, construction and approval controls; or
- Section 904 alternative automatic fire-extinguishing system, where clean agent is being used as an approved alternative to a required sprinkler system, without creating entitlement to sprinkler-based code reductions.

This distinction is decisive. A permitted sprinkler omission under Section 903 is not the same as using clean agent as a direct substitute for sprinklers under Section 904.

2. Executive opinion

The correct technical position is:

- Section 901 sets the governing obligation.
Fire protection and life safety systems must be properly installed, operated, tested and maintained in accordance with SBC 201 and SBC 801. Where a code exception, reduction or design option relies on a fire protection system, that system becomes a required system¹.
- Section 903 sets the sprinkler baseline.
Where SBC 201 requires a building or portion of a building to be equipped throughout with an automatic sprinkler system, the sprinklers are required to be installed throughout in accordance with NFPA 13, except where SBC 201 itself or NFPA 13 permits omission².
- Permitted omissions do not defeat sprinkler-protected status.
SBC 201 commentary expressly recognizes that buildings complying with the listed omission conditions remain fully sprinklered throughout and remain eligible for applicable sprinkler-based alternatives, exceptions and reductions, subject to approval of the building official³.
- Section 904 is not a general sprinkler-credit mechanism.
Clean-agent systems are alternative automatic fire-extinguishing systems. Where they are installed as alternatives to required sprinkler systems, approval is required and they cannot be used to claim exceptions or reductions allowed for automatic sprinkler systems⁴.
- NFPA 75 and NFPA 76 support clean-agent protection for sensitive equipment spaces.
They recognize gaseous or clean-agent systems as technically appropriate for information technology and telecommunications facilities where equipment vulnerability, data continuity, reduced damage and rapid return to service are relevant design objectives^{5,6}.
- Nobody should reject the design merely because clean agent is used in selected telecommunications, IT or electrical equipment rooms. The legitimate question is whether each sprinkler omission has a valid Section 903 / NFPA 13 basis or is being treated as a Section 904 alternative with no claim to sprinkler-based reductions for that omitted area

¹ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) ch 9, ss 901.1-901.2.

² Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) ss 903.3, 903.3.1 and 903.3.1.1.

³ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) commentary to s 903.3.1.1.1.

⁴ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) ss 904.1, 904.2 and 904.2.1.

⁵ National Fire Protection Association, *NFPA 76: Standard for the Fire Protection of Telecommunications Facilities* (2016 edn, NFPA 2016) ss 8.6.2.2.1 and 8.6.2.3.1-8.6.2.3.3.

⁶ National Fire Protection Association, *NFPA 75: Standard for the Protection of Information Technology Equipment* (2013 edn, NFPA 2013) ss 8.1.1.1, 8.1.2, 8.4.1 and 8.4.2.

3. Applicable code and standard framework

SBC 201 Section 901: general control of fire protection systems

Section 901 is important because it prevents artificial separation of the fire protection strategy into isolated clauses. Chapter 9 prescribes where fire protection and life safety systems are required and how they are to be designed, installed and operated. A system installed to obtain a code exception, reduction or design option is treated as a required system. Conversely, even a non-required system, if voluntarily installed, must still comply with the applicable code provisions and referenced standards⁷.

This means the analysis cannot be reduced to a single sentence in Section 904. The proposed fire protection arrangement must be assessed as an integrated Chapter 9 strategy: sprinkler system, clean-agent system, detection, alarm, shutdown, supervision, acceptance testing and maintenance must function together.

SBC 201 Section 903 and NFPA 13: sprinkler baseline and permitted omission

Section 903 establishes the automatic sprinkler system regime. Where the building, occupancy, fire area or code concession requires sprinkler protection throughout, the sprinkler system must be designed and installed in accordance with NFPA 13 unless SBC 201 or NFPA 13 provides a permitted omission route.

The most important point for the present issue is that a building can remain “fully sprinklered throughout” despite certain sprinkler omissions, provided the omission is within the expressively stipulated conditions. SBC 201 commentary to Section 903.3.1.1.1 makes this explicit: compliant omission in listed sensitive locations does not automatically remove the building’s sprinkler-protected status⁸.

NFPA 13 likewise provides specific omission routes. For example, sprinklers are not required in electrical equipment rooms where the room is dedicated to electrical equipment only, the equipment type satisfies the stated criteria, the equipment is in a 2-hour fire-rated enclosure with protected penetrations, and storage is not permitted⁹.

SBC 201 Section 904: alternative automatic fire-extinguishing systems

Section 904 deals with automatic fire-extinguishing systems other than automatic sprinkler systems. This includes clean-agent suppression systems. Section 904.2 permits such systems as an alternative to required sprinkler systems only with approval by the building official. Section 904.2.1 then restricts the use of such systems for sprinkler-based exceptions or reductions¹⁰.

Accordingly, Section 904 should not be read as a blanket rule that any clean-agent protected room makes the entire building non-sprinklered. It should be read as a rule controlling the consequences where clean agent is being used as an alternative to a required sprinkler system without a separate Section 903 / NFPA 13 omission basis.

4. Correct interpretation of SBC 201 Section 904.2.1

Incorrect interpretation is to treat Section 904.2.1 as though it answers all situations in which a clean-agent system is present. Section 904.2.1 answers a narrower question, whether an alternative automatic fire-extinguishing system can be treated as equivalent to an automatic sprinkler system for the purpose of sprinkler-based code exceptions or reductions.

The correct interpretation is set out below.

Scenario	Correct classification	Consequence
Sprinklers omitted because SBC 201 Section 903 / NFPA 13 expressly permits omission, with building official approval and required detection or separation.	Permitted sprinkler omission.	The building may remain fully sprinklered throughout for applicable code purposes. Clean agent may be supplementary, risk-control or equipment-protection enhancement.

⁷ Saudi Building Code National Committee, *SBC 801: Saudi Fire Protection Code* (2024 edn, Saudi Building Codes 2024) ss 901.4.1, 901.4.2 and ch 80.

⁸ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) commentary to s 903.3.1.1.1.

⁹ National Fire Protection Association, *NFPA 13: Standard for the Installation of Sprinkler Systems* (2025 edn, NFPA 2025) s 9.2.6.

¹⁰ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) ss 904.1, 904.2 and 904.2.1.

Scenario	Correct classification	Consequence
Clean agent is installed in addition to sprinklers.	Supplementary or special-hazard protection.	The presence of clean agent does not impair sprinkler-protected status. Both systems must comply with their applicable standards.
Sprinklers are required by Section 903 and are omitted solely because clean agent is proposed, without a recognised omission route.	Alternative automatic fire-extinguishing system under Section 904.	The clean-agent system cannot be used to claim sprinkler exceptions, reductions or sprinkler-protected status for that omitted area unless separately approved through the applicable code mechanism.
Clean agent protects telecommunications / IT equipment rooms where equipment-specific risk justifies non-water suppression and the sprinkler omission is separately justified.	Sound and code-recognized design route.	The design fire engineering team must document the room-specific basis, agent compatibility, detection, discharge warning, shutdown sequence, enclosure integrity and AHJ acceptance.

The question therefore is not whether clean agent exists. The question is the legal and technical basis on which sprinklers have been omitted from the room.

5. Telecommunications and IT equipment rooms: clean-agent protection is a recognised technical solution

There is no sound technical basis to treat the use of clean-agent protection in telecommunications, IT or sensitive electronic equipment rooms as inherently unusual, unsafe or unjustified. The combined SBC / NFPA framework recognises clean-agent systems as a legitimate fire protection method when matched to the hazard, equipment characteristics and occupancy assumptions.

SBC 201 commentary recognises that a computer room may be protected by an automatic sprinkler system, an alternative gaseous suppression agent system or a combination of both systems, provided the code conditions and building official approval are satisfied¹¹.

NFPA 75 is directly relevant to information technology equipment. It recognises both automatic sprinkler systems and gaseous clean-agent extinguishing systems. It also states that where there is a critical need to protect data in process, reduce equipment damage and facilitate rapid return to service, consideration should be given to gaseous-agent protection in sprinklered or non-sprinklered IT equipment areas. Where such systems are used, NFPA 75 requires the applicable gaseous system standard, including NFPA 2001 for clean-agent systems¹².

NFPA 76 is directly relevant to telecommunications facilities. It recognises sprinkler systems, clean-agent systems, halon systems and water mist systems as potential fire suppression methods. Where clean-agent systems are provided, NFPA 76 requires design, installation and maintenance in accordance with NFPA 2001, and requires detection arrangements designed to reduce the potential for false discharge^{13,14}.

The NFPA Fire Protection Handbooks supports the same engineering logic. It identifies information technology rooms as containing sensitive electronic equipment, power distribution units, UPS equipment, network equipment and storage systems. It explains that electronic equipment can be vulnerable to heat, smoke and humidity, and that a fixed gaseous-agent system may be justified where the value of equipment and the risk of IT system interruption require protection of data in process, reduced equipment damage and rapid return to operation¹⁵.

Technical inference

For telecommunications, IT, data, control and similar sensitive electronic equipment rooms, clean-agent protection is a mainstream technical response. The presence of clean agent should be understood as an

¹¹ Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024) commentary to s 903.3.1.1.1.

¹² National Fire Protection Association, *NFPA 75: Standard for the Protection of Information Technology Equipment* (2013 edn, NFPA 2013) ss 8.1.1.1, 8.1.2, 8.4.1 and 8.4.2.

¹³ National Fire Protection Association, *NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems* (2022 edn, NFPA 2022).

¹⁴ National Fire Protection Association, *NFPA 76: Standard for the Fire Protection of Telecommunications Facilities* (2016 edn, NFPA 2016) ss 8.6.2.2.1 and 8.6.2.3.1-8.6.2.3.3.

¹⁵ Arthur E Cote and others, *Fire Protection Handbook* (20th edn, NFPA 2008) 9-13.

equipment-risk and continuity-driven protection measure, not as evidence that the building is generally non-sprinklered.

Equipment-inherent reasons supporting clean-agent protection

The justification for clean-agent protection in selected rooms is not merely “water damage”. It is a broader equipment-risk and continuity rationale. The following technical considerations are relevant:

- **Energised equipment exposure.** Telecommunications, IT and control rooms often contain energised electrical and electronic equipment. Introducing water into energised equipment can create short-circuit, shock, arc-flash, equipment failure and service-continuity concerns unless de-energisation is immediate and reliable.
- **Service continuity.** Telecommunications and IT systems may support security, communications, life-safety interfaces, building management, business operation or emergency response. A water discharge can lead to extended outage even after the fire is controlled.
- **Early-stage suppression objective.** Clean-agent systems are commonly paired with early smoke detection to attack incipient equipment fires before significant flame spread, smoke contamination or heat damage occurs.
- **Non-residue characteristic.** Clean agents are selected because they do not leave the residue associated with dry chemical discharge and are therefore more compatible with sensitive electronics.
- **Rapid reinstatement.** For rooms with high operational dependency, the desired design outcome may include rapid return to service, not merely structural fire control.

These considerations do not create an automatic exemption from sprinkler protection. They create a sound technical basis for a room-by-room justification, to be evaluated under SBC 201 Section 903 / NFPA 13 omission criteria or, where applicable, under Section 904 as an approved alternative system.

6. Sprinkler omission, electrical rooms and personnel-safety considerations

Sprinklers are not categorically unsuitable in all electrical rooms

It would be technically imprecise to say that sprinklers are never suitable in electrical rooms. Sprinklers are widely used in many buildings containing electrical rooms. The correct proposition is narrower: in certain electrical, telecommunications, IT or control rooms, water discharge may be incompatible with the equipment, continuity function or personnel-safety assumptions, and the code provides defined circumstances where sprinkler omission may be permitted.

NFPA 13 does not give an open-ended exemption for all electrical rooms. It gives a controlled omission route where all required conditions are met: dedicated electrical use, permitted equipment type, 2-hour fire-rated enclosure with protected penetrations, and no storage. This reinforces the need for evidence, not assumption¹⁶.

7. Decision matrix

Question to ask	Required evidence	Interpretation
Is sprinkler omission claimed under SBC 201 Section 903.3.1.1.1 or NFPA 13?	Clause reference, room use, equipment type, fire-resistance enclosure, no-storage control, detection provision, AHJ approval.	If compliant, omission does not automatically defeat whole-building sprinkler status.
Is clean agent installed in addition to sprinklers?	Sprinkler drawings and clean-agent drawings showing coexistence or protected volumes.	No loss of sprinkler-protected status merely because clean agent is installed.
Is clean agent installed instead of sprinklers without a Section 903 / NFPA 13 omission basis?	Section 904 approval pathway and equivalency/alternative submission.	Section 904.2.1 restriction applies; clean agent cannot be used for sprinkler-based code reductions.
Is the room a telecommunications, IT, data, control or sensitive electrical equipment room?	Equipment schedule, continuity requirement, water incompatibility statement, room occupancy, detection and clean-agent design basis.	Clean-agent protection is technically recognised, but the sprinkler omission route still must be documented.

¹⁶ National Fire Protection Association, *NFPA 13: Standard for the Installation of Sprinkler Systems* (2025 edn, NFPA 2025) s 9.2.6.

8. Required technical documentation

A design fire engineering expert should submit a concise room-by-room technical package. The package should not rely on generic statements. It should identify the precise code route for each room where sprinklers are omitted or clean agent is proposed.

- Room schedule.
Room name, room number, use, occupancy assumption, equipment type and whether the room is normally occupied, intermittently occupied or normally unoccupied.
- Sprinkler basis.
Confirmation whether sprinklers are installed, omitted under Section 903 / NFPA 13, or replaced by a Section 904 alternative.
- Omission justification.
Exact clause basis for omission, supported by drawings, construction details and no-storage controls.
- Clean-agent design basis.
Agent type, design concentration, hazard volume, enclosure integrity basis, NFPA 2001 compliance, detection/release sequence and hold-time assumptions.
- Personnel safety controls.
Pre-discharge warning, time delay, signage, egress, power shutdown, HVAC shutdown, abort/manual release functions where applicable, and training.

Sections 901, 903 and 904 of SBC 201 must be read together. Section 903 establishes the baseline requirement for automatic sprinkler systems, including installation throughout in accordance with NFPA 13 where such protection is required. Section 904 addresses alternative automatic fire-extinguishing systems, including clean-agent systems. It does not mean that the mere presence of a clean-agent system in selected rooms automatically causes the entire building to lose sprinkler-protected status.

The correct test is whether the sprinkler omission in the affected room is permitted under Section 903 / NFPA 13 and accepted by the building official, or whether clean agent is being used as a Section 904 alternative to a required sprinkler system. In the former case, the building may remain sprinkler protected. In the latter case, Section 904.2.1 prevents the alternative system from being used to claim sprinkler-based code exceptions or reductions.

Telecommunications, IT, data and sensitive electrical equipment rooms are recognized in NFPA practice as suitable candidates for clean-agent protection where the equipment characteristics, continuity requirements and recovery objectives justify non-water suppression. NFPA 75 recognises gaseous-agent protection in IT equipment areas where there is a critical need to protect data in process, reduce equipment damage and facilitate return to service. NFPA 76 similarly recognises clean-agent systems for telecommunications facilities, subject to design, installation and maintenance in accordance with NFPA 2001 and suitable detection arrangements. Therefore, the use of clean-agent protection in such rooms is not inherently unsound. The remaining issue is documentation of the room-specific sprinkler omission basis and the personnel-safety controls associated with the clean-agent system.

9. Conclusion

The SBC/NFPA compliant conclusion is:

- If sprinklers are omitted in a room under an accepted Section 903 / NFPA 13 omission route, the building may remain sprinkler protected for applicable code purposes.
- If clean agent is installed as an additional special-hazard or equipment-protection system, its presence does not impair sprinkler-protected status.
- If clean agent is used as a direct replacement for a required sprinkler system without a valid omission basis, Section 904 applies and the alternative system cannot be used to obtain sprinkler-based exceptions or reductions.
- For telecommunications, IT and sensitive electronic equipment rooms, clean-agent protection is a recognised and sound technical solution when justified by equipment characteristics, continuity needs, risk of water incompatibility and personnel-safety controls.

The central issue is not whether clean agent is technically acceptable. The central issue is whether each sprinkler omission has been properly justified under the correct SBC / NFPA route.

10. Bibliography

Primary codes and standards

National Fire Protection Association, *NFPA 13: Standard for the Installation of Sprinkler Systems* (2025 edn, NFPA 2025).

National Fire Protection Association, *NFPA 75: Standard for the Protection of Information Technology Equipment* (2013 edn, NFPA 2013).

National Fire Protection Association, *NFPA 76: Standard for the Fire Protection of Telecommunications Facilities* (2016 edn, NFPA 2016).

National Fire Protection Association, *NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems* (2022 edn, NFPA 2022).

Saudi Building Code National Committee, *SBC 201: Saudi General Building Code* (2024 edn, Saudi Building Codes 2024).

Saudi Building Code National Committee, *SBC 801: Saudi Fire Protection Code* (2024 edn, Saudi Building Codes 2024).

Secondary technical sources

Cote AE and others, *Fire Protection Handbook* (20th edn, NFPA 2008).

Appendix A - Room-by-room compliance schedule (template example)

Room / area (examples)	Equipment / use	Sprinkler status	Omission route	Clean-agent basis	Safety controls / approval
Telecom room	Telecommunications racks, network distribution, power and cooling support.	To be confirmed.	SBC 903 / NFPA 13 or SBC 904 route to be stated.	NFPA 76 / NFPA 2001; equipment continuity and non-residue suppression.	Detection, cross-zoning, pre-discharge warning, signs, egress, shutdown sequence, AHJ approval.
IT / server room	Servers, storage, UPS/PDU, network switching.	To be confirmed.	SBC 903 / NFPA 13 or SBC 904 route to be stated.	NFPA 75 / NFPA 2001; protection of data in process, reduced damage and rapid return.	VESDA/smoke detection where applicable, warning alarms, HVAC shutdown, enclosure integrity, training.
Electrical equipment room	Dry-type electrical switchgear or other qualifying electrical equipment.	To be confirmed.	NFPA 13 electrical room omission if all conditions met; otherwise Section 904 approval route.	Water incompatibility / personnel safety / service continuity to be substantiated.	2-hour enclosure, no combustible storage, signage, access control, detection, AHJ approval.
Control room / BMS room	Controls, monitoring, communication interfaces.	To be confirmed.	Room-specific code route required.	Sensitive electronics and continuity function.	Discharge warning, shutdown strategy, manual controls, emergency procedure.