

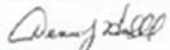


# EFCOG Radiation Protection Subgroup High Radiation Area – Physical Controls

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ADC/RO		Health Physics Services
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(Name/Organization)

DATE: October 13, 2011

## Radiological Protection Operational / Regulatory

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- **High Radiation Area Physical Controls**

# High Radiation Area Physical Controls

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Requirement: (10 CFR 835)

*High radiation area* means any area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.1 rem (0.001 sievert) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

# Entry Controls

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Subpart F--Entry Control Program

§ 835.501 Radiological areas.

§ 835.502 High and very high radiation areas.

(b) Physical controls

DOE-STD-1098-99 Appendix 3B

- Physical Access Controls for High and Very High Radiation Areas

5Q "Radiological Control Manual", Chapter 3

5Q 1.1, Procedure 519, "HIGH AND VERY HIGH RADIATION AREA ACCESS CONTROL"

# 10 CFR 835 High Rad Physical Controls

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§ 835.502 High and very high radiation areas.

(b) Physical controls. One or more of the following controls shall be used for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed a deep dose equivalent to the whole body of 1 rem (0.01 sievert) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates:

- (1) A control device that prevents entry to the area when high radiation levels exist or that, upon entry, causes the radiation level to be reduced below the level that defines a high radiation area;
- (2) A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area;
- (3) A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry;
- (4) Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained;**
- (5) Continuous direct or electronic surveillance that is capable of preventing unauthorized entry;**
- (6) A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.

## 5Q 1.1, Procedure 519 - 5.1 Physical Controls

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- Entryways that are locked or otherwise secured, except during periods when access to the area is required, with positive control over each entry
  - Cypher (combination) locks are not acceptable for this application.
  - **Wire ties that require a tool for removal are acceptable for physical access control barricades (i.e., to secure fencing that creates the barricade).**
  - Keys to locks shall be under positive control to prevent unauthorized use. These controls shall be described in the facility specific administrative procedures.
  - Electrically-activated locks must be controlled such that unauthorized use is prevented. The method of controlling the unlocking device/push button, etc., shall be described in the facility-specific administrative procedure.
- **Continuous direct or electronic surveillance that is capable of preventing unauthorized entry**

# 'Problem Child' #1

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## 'Problem Child' #2

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## 'Problem Child' #3

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# Final Resting Place – “Mega Trench”



# Use of "Snow Fence" as Physical Control

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# View of "Problem Child" #1's Final Resting Place



# 'Problem Child' #1 in Place



# 'Problem Children' in place



# Ready for Grout!

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# Ready for Cap!

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## Conclusion & Intent

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- Use of 4 foot “Snow Fence” with tie wraps is appropriate graded approach to application of “physical controls”
- There is no regulatory restriction for this method
  - DOE Radiological Control Technical Position (RCTP 97-01), “Control of High Radiation Areas per Title 10, Code of Federal Regulations, Part 835.502”
- Consistent with Industrial Practices
  - Regulatory Guide 8.38 – “Control of Access to High and Very High Radiation Areas in Nuclear Power Plants”
  - RG 8.38 does discuss 6’ Fences but also endorses “Graded Approach”
- These physical controls are also considered adequate for “transitional situations” >1rem/hr up to ~ 10 rem/hr.