Occupational Safety and Health Policy:Kubicki:3-4794

INTERIM GUIDELINES FOR FIRE PROTECTION OF ABANDONED FACILITIES AND FOR FACILITIES UNDERGOING DECONTAMINATION AND DECOMMISSIONING

Distribution

The purpose of this memorandum is to provide interim guidance on the determination of appropriate levels of fire protection for facilities that are undergoing decontamination and decommissioning (D&D). This includes all facilities that are abandoned and are otherwise undergoing a transition from an historic occupancy.

They have been developed as a result of numerous expressions of need that have been expressed by Department of Energy (DOE) field elements and contractors. This is due to a perceived insufficiency of guidance in the application of existing DOE criteria to facilities of this nature. These guidelines do not represent new requirements but are the means to apply existing DOE fire safety policy in a more flexible and cost-effective manner.

The subject fire safety guidelines are provided in the Attachment. They were developed from technical input provided by the DOE and contractor representatives on the DOE Fire Safety Committee. The guidance represents a minimally acceptable level of effort. They are intended to be utilized by qualified fire protection engineers. They are intended to be utilized until such time as a more comprehensive policy governing the safety of D&D facilities is promulgated by the Department.

If you have any questions, please contact me on 301-903-4794.

Dennis J. Kubicki, Chairman
DOE Fire Safety Committee

Attachment

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FIRE SAFETY GUIDELINES FOR D&D FACILITIES

Introduction

The Department of Energy (DOE) is faced with decisions regarding the future operational status of certain fire protection systems in facilities that are planned to undergo decontamination and decommissioning (D&D), as well as facilities that are abandoned or face occupancy changes for other reasons. These decisions are complicated by the fact that a number of these facilities are presently being used for other purposes, such as storage of hazardous or mixed waste materials. An additional factor is the cost associated with inspection, testing, maintenance and repairs of the fire protection systems.

Existing fire protection features in these facilities were originally provided on the basis of potential fire loss (in dollars), fire risks associated with active process operations, mission impact, and other design considerations. However, some of these risks may no longer be present. For the most part, these facilities have no significant present value and programmatic interruption is no longer a factor, although this is not always the case.

As of the date of this guidance, DOE has issued no specific comprehensive policy governing safety requirements in abandoned facilities and facilities undergoing D&D and safe shutdown. Work is currently underway within the Department to develop safety criteria for such facilities; however, promulgation dates are uncertain. Until such time as a comprehensive DOE policy is developed, fire protection decisions for these facilities have to be based on existing DOE fire safety criteria, as applicable.

Fire safety requirements relevant to this issue include DOE 5480.7A, "Fire Protection," DOE 6430.1A, "General Design Criteria," 29 CFR Part 1926, "Safety and Health Regulations for Construction," and National Fire Protection Association (NFPA) Standard No. 241, "Standard for Safeguarding Construction, Alteration and Demolition Operations." Where conflicting criteria exist, resolution shall be the responsibility of the DOE Authority Having Jurisdiction (AHJ). The fire protection requirements apply unless specific relief has been granted by the Department.

Fundamental Principles

Decisions relating to fire safety of abandoned facilities, as well as facilities and processes undergoing D&D (including the surveillance and maintenance phase of D&D) and safe shutdown, shall be made on the basis of the following principles:

- Pending development of a comprehensive DOE policy governing safety for these facilities, fire protection shall be governed by existing departmental fire safety requirements. (Refer to DOE 5480.7A.)

- Pending development of an alternative decision making process in conjunction with D&D safety policy, approval of alternate fire protection configurations shall be accomplished through "exemptions" or "equivalencies" as defined in DOE 5480.7A. An exemption or equivalency may be processed for each facility or for a group of facilities.

- The evaluation of fire risks in relation to the need for fire safety features can be accomplished through a graded fire hazards analysis (FHA). (Refer to DOE 5480.7A and the DOE Fire Hazards Analysis Policy Statement of November 7, 1991.)

- The need for fire protection features in these facilities is governed by the fire risks to the public, workers, fire fighters and the potential release of hazardous and radiological materials to the environment. Property protection and program continuity are not normally factors to consider unless the facility possesses a definable value and/or mission as determined by the DOE AHJ.

- Fire hazards within these facilities may change over time. Fire protection must be adequate to deal with these changes. The FHA shall be revised as appropriate when significant changes in occupancy or hazard occur that affect fire safety.

- Fire safety features that have been required by DOE may be rendered inoperable or considered no longer needed if justified by the FHA. Such features may be abandoned in place until they are dismantled as part of planned demolition activities.

- The decision to deactivate automatic fire suppression systems in large facilities must reflect the possibility that emergency response forces may not be able to safely enter the facility to effect manual fire suppression. A "stand off and protect" tactical approach, which features exterior fire attack and protection of exposures, shall be approved by DOE as part of the fire department pre-plans or their standard operating procedures. This approach necessitates additional emphasis on maintaining communication and cooperation between facility personnel and emergency response groups to include: updating fire pre-plans and being aware of changes in occupancy and fire protection system status.

- Retained fire protection features in these facilities are not required to comply with all of the design and installation criteria of the governing NFPA standard if the DOE AHJ concurs that the system will function adequately during a fire in its current design mode. Concurrence should be documented in an appropriate manner after consultation with the cognizant DOE fire protection engineer.

- Retained fire protection features must be inspected, tested and maintained in a manner sufficient to assure that the features will function adequately during fire incidents.

- Abandoned, safe shutdown and D&D facilities and related procedures should be routinely inspected and reviewed by representatives of the site emergency response forces and fire protection engineering staffs consistent with established standard operating procedures and fire protection program criteria.

Additional Considerations

Prior to commencement of D&D activities, appropriate procedures should be approved and implemented (including worker training) governing the control of potentially hazardous operations including, but not limited to, cutting and welding, handling of combustibles, and smoking.

The fire risks associated with materials and processes used as part of the D&D process must be evaluated by a fire protection engineer. Fire protection features must be adequate to minimize these risks to an acceptable level.

The deactivation of process lines containing hazardous materials as well as flammable or combustible liquids must be preceded by an analysis or performed under a work plan which addresses the methods used to control related hazards during the deactivation process. Appropriate safeguards shall be in place to minimize the accidental release of residual materials that may remain in piping and tanks.

Building emergency egress features are required to be maintained consistent with the requirements for buildings under construction, as a minimum, as modified by the FHA. These include emergency lighting and exit signage. Locked and abandoned facilities where there is no human occupancy would not need to maintain emergency egress features. Literal conformance with the provisions of the Life Safety Code, NFPA Standard 101, is not required for conditions that have no significant impact on the ability of occupants during D&D to safely evacuate a building during a fire.

Where no automatic system exists, an effective means for manually summoning the site emergency response forces and for communicating with personnel inside of a building is required. This can take the form of an exterior fire alarm pull station or call box, telephone (fixed or mobile), radio or some combination of the above based on the accessibility of the devices to personnel and their reliability.

All retained interior fire protection systems shall be maintained operational while interior D&D activities are taking place. Verification of operable status should include appropriate inspection and testing in accordance with established procedures. Complete deactivation is anticipated at such time as shell demolition occurs. Temporary deactivation of fire protection features should be treated as an impairment, with appropriate interim compensatory measures implemented until such time as the feature is returned to full operational mode.

The site and facility fire water distribution system, including hydrants, siamese connections to sprinkler systems, and interior standpipe systems, must be maintained in an operable mode. Access for mobile apparatus for emergency response shall be maintained. (Refer to fire department pre-fire plans.)

Periodic tours of the D&D facilities should be conducted by the site emergency response force to familiarize them with existing conditions and to revalidate fire pre-plans. Drills and training exercises should also be conducted at these locations at an appropriate frequency commensurate with the fire risks and complexity of the facility.

To the extent that the FHA validates the need to maintain fire protection features during D&D activities, such features shall be inspected, tested and maintained, consistent with established procedures, sufficient to assure that they will function effectively during a fire. This implies that defects or design deficiencies that are not critical to effective performance, as determined by the AHJ, may remain as is.

The authority to resolve other issues related to fire safety for D&D facilities that are not explicitly addressed by this document resides with the DOE AHJ.

Decision Making Process

The Fire Hazards Analysis is the mechanism for reassessing the need for fire protection features in any facility. The "exemption" or "equivalency" process is the means to obtain formal approval for alternate fire protection configurations. Exemptions for fire protection are only necessary when a fire safety requirement, as explicitly stated in a DOE Order, cannot be met. Acceptable variances from NFPA codes and standards should be processed as an equivalency.

The process, as applicable to this issue, may begin with a facility walkdown by cognizant safety professionals, including fire protection engineers, so as to quickly ascertain potential areas where a reduced fire protection profile may be justified.

Justification for reducing fire safety features shall be based on a graded fire hazards analysis, which comprehensively considers the consequences of a fire on the health and safety of the public, as well as the safety of building occupants, fire fighters and the environment. Additional considerations are the maximum possible fire loss (which must include a reasonable determination of anticipated cleanup costs based on established practice) and possible impact to DOE missions and programs. (It is anticipated, however, that programmatic impact will be nil for a D&D facility unless there is explicit evidence to the contrary.)

Guidance on the performance of a graded FHA was provided in a memorandum dated November 7, 1991, by the DOE Office of Environment, Safety and Health and the Office of Nuclear Safety Policy and Standards. Specific

requirements for a graded FHA are contained in DOE 5480.7A. The DOE (draft) Model Fire Hazards Analysis may be used as a guide. It should be emphasized that the scope and depth of the analysis, as well as the related documentation, should be commensurate with the complexity of the facility, the nature of the fire risks, and the type of D&D activities. The FHA represents the fire safety "envelope" that governs subsequent D&D activities.

If the FHA concludes that an unmitigated fire will result in no significant adverse consequences (see above), a technical basis would exist for deactivating existing automatic fire suppression systems. It must be emphasized, however, that deactivating fixed fire suppression systems may leave no practical alternative for suppressing a fire. This is especially true of the larger process buildings where entry by emergency response forces would not be safe under anticipated fire conditions. The absence of active suppression activities or active fire protection features during a fire may not be considered acceptable from the standpoint of public perception. An effort should be made to anticipate the public reaction to an unmitigated fire and to factor this reaction into a decision to deactivate a fire protection system.

If a decision is made to deactivate a fire suppression system in a given area or facility, it is necessary to assure that the use of the area does not change in such a manner as to result in the reintroduction of commodities or activities that would significantly increase fire risk. Consequently, the conclusions of the initial fire hazard analysis must be reassessed if a decision is made to significantly alter D&D activities in an area where sprinkler protection has been deactivated. If existing fire protection is insufficient to mitigate the fire hazards, the fire suppression system should be reactivated and other safety features provided, as appropriate. This reassessment and the provision of supplementary fire protection should occur prior to the change.

Based on favorable conclusions from the FHA, a decision to proceed with an exemption or equivalency request can then be made. The exemption/ equivalency package should be prepared by the fire protection technical staff of the M&O contractor and address the applicable DOE requirements, the reasons these requirements cannot be met, the impact on safety resulting from noncompliance, a description of compensatory or other risk mitigating features, and potential cost savings. (The additional project costs for a fire protection feature(s) are not considered an acceptable reason that a DOE requirement cannot be met.) It is suggested that the draft exemption/equivalency request be distributed to the responsible DOE technical experts so as to provide an opportunity to address questions and concerns. Once this has been accomplished, the "official" request should be processed for concurrence by the cognizant DOE officials as described in DOE 5480.7A.