CHAPTER 9

SECURITY

9.1. INTRODUCTION

Security is an important aspect of SPCC planning. Oil and HS spills can occur as a result of vandalism or pilferage of fuel or chemicals. The degree of security provisions necessary is dependent on the location, strategic importance, and potential for vandalism of the area. Regardless of the size or location of the area, some security is required.

All Navy bases are fenced and guarded against unauthorized entry. This in itself affords a great deal of protection against vandalism and sabotage. However, unauthorized personnel have been able to enter and use areas in the past (i.e. unauthorized loading of HW tank, pilferage of chemicals, tampering with valves, and pumps). Adequate security reduces the likelihood of spill incidents due to tampering, vandalism, and sabotage.

Area related guidance is a general SPCC guidance which addresses multiple regulations, not just 40 CFR 112. RCRA (40 CFR 264.14) requires the installation of security measures at HW handling sites, and SPCC regulations (40 CFR 112.7(e)(9)) recommend their implementation at oil handling sites to prevent accidental or intentional entry. Protection measures against vandalism, theft, sabotage or other improper and illegal use of the areas should be provided. These measures include fencing, lighting, vehicular traffic control, securing of equipment and buildings, including locks for valves, pumps, control switches, and gates, guards, and routine security patrols.

High-level security may be required at a major fuel or chemical area and may include barbwire fencing, security patrols, and centralized transfer controls and signals. A small aboveground storage tank may require low-level security consisting of simply having the valves locked shut.

9.2. FENCING 112.7(e)(9)(i)

Security fencing prevents unauthorized access to petroleum or chemical storage or handling areas. 40 CFR 112(e)(9)(i) recommends that all oil handling, processing, and storing areas be fully fenced and entrance gates be locked and/or guarded when the plant is not operational or is unattended. Perimeter fencing is often adequate to satisfy the fencing requirement. However, there has still been unauthorized use of fuel pumps

by military and non-military personnel, resulting in valves being left open and fuel being spilled.

Sensitive storage and handling areas should be fenced separately within the larger fenced confines of the activity. Tanks, drums, loading/unloading areas, valves, pumps and other sensitive equipment, should be enclosed within the fenced area. In general, if fencing small remote areas is not practical; then valve locking becomes especially critical (See Section 9.4).

The minimum fence height recommended by DM-22 is seven feet above ground, surmounted by barbed wire, especially in high-risk areas. Installing up to three strands of barbed wire above the fixed fence structure is standard practice. While it has been proven that this system can be easily surmounted by an individual having specific intent to enter, it is sufficient for most applications. The law recognizes that it may be impossible to stop a determined and well-equipped vandal and requires only that a reasonable effort be made to discourage unauthorized entry.

At unusually sensitive or vandalism-prone fuel areas, continuous curbing should be constructed to discourage tunneling. The curbing should be a minimum of 6 inches below grade and 1 to 2 inches above grade.

If new fencing is needed, it should be designed and constructed in accordance with DM-22, DM-5.12, MIL-HDBK-1013/10, and MIL-HDBK-1013/1A.

9.3. GATES

Gates in fences are designed using the same design manuals as fences, as specified in DM-22, DM-5.12, MIL-HDBK-1013/10, and MIL-HDBK-1013/1A. Any gates should be securely locked or guarded when the area is unattended or not in operation.

9.4. EQUIPMENT AND BUILDING SECURITY 112.7(e)(9)

All buildings, areas, and equipment susceptible to vandalism or unauthorized use, should be provided with appropriate locks to prevent actions which could result in releases. This equipment includes valves, pumps, controls, and connections. At a minimum, the following security requirements should be practiced for areas and equipment at Navy activities. While the 40 CFR 112 requirements only apply to oil areas, they should also be applied to HS areas as good engineering practice.

- All entrance doors or gates to an oil or HS area or building should be locked and/or guarded when the area is not in operation. (40 CFR 112.7(e)(9)(i))
- Any valves that permit direct flow of the contents of a tank or containment area to release into the environment should be securely locked in the closed position when not in operating or standby status. (40 CFR 112.7(e)(9)(ii))
- When pumps are not operating or on standby status, the starter control should be locked in the “off” position or located at a site accessible only to authorized personnel. (40 CFR 112.7(e)(9)(iii))

- The loading/unloading connections of transfer pipelines, including fill ports on underground tanks, should be securely capped or blank-flanged when out of service for an extended time. This also applies to pipelines that are emptied by draining or inert gas pressure. (40 CFR 112.7(e)(9)(iv))

Securing pump controls can be achieved with lockable control boxes, key-activated pump controls, remote pump controls or power-disconnect switches located in a securable building, or by the presence of on-site security personnel. In the event that physical barriers are not provided, many areas have a main power disconnect switch to the pumps to prevent the unauthorized use.

9.5. LIGHTING 112.7(e)(9)(v)

40 CFR 112.7(e)(9)(v) states that an area should have lighting that is commensurate with the type and location of the area. Lighting serves two purposes: the discovery of spills at night and the prevention of spills occurring through acts of vandalism. Emergency lighting may be required in the event of main power supply outages.

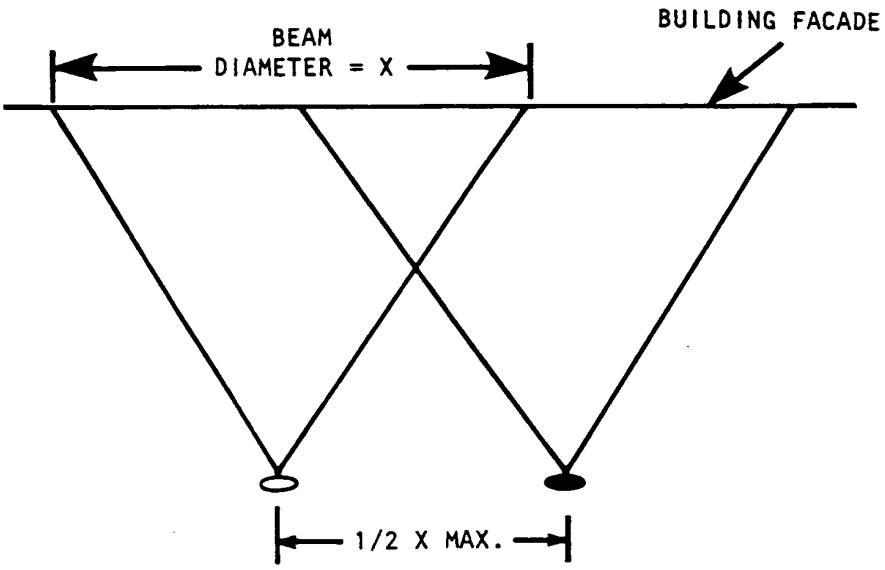
9.5.1. General Requirements

OSHA standards for work-place illumination ensure adequate lighting to prevent safety-related accidents and to protect worker health. SPCC (40 CFR 112.7(e)(9)(v)) regulations recommend sufficient lighting to detect unauthorized use of the area and chemical releases.

Proper and economical lighting design involves optimum lamp selection and projection distance to conserve energy and to lower installation and maintenance costs. Figure 9-1 shows the methodology for determining the spacing of area lighting for SPCC purposes. Other factors which determine the adequacy of a lighting system include lamp type, floodlight beam projection, mounting height, light spacing, and pole strength.

For security purposes, MIL-HDBK-1013/1A specifies minimum lighting criteria depending upon area and style of lighting. Typically, minimum lighting requirements for boundary or area lighting is in the range of 0.2 to 0.5 foot-candles of illumination. A portable light meter used at night will determine if an area has adequate lighting.

Areas which are not lighted, or are inadequately lighted, should be upgraded to at least the minimum standards. In correcting lighting deficiencies, the engineer is often restricted by the design feature of the existing system (i.e. pole height), and the optimum solution may not be practical or economically feasible. Where additional lighting is required, it should be designed and constructed in accordance with MIL-HDBK-1013/1A.



Source: Spill Prevention and Fail-Safe Engineering for Petroleum and Related Products, J. L. Goodier, Copyright 1983. Used by permission of Noyes Publications.

Figure 9-1
Light Beam Overlap Criteria

9.5.2. Lamp Selection

Lamp selection has a significant impact on performance and cost. The performance of a lamp or type of lamp can be judged according to several different criteria. The most commonly used are efficacy, color rendering, color appearance, and lumen maintenance. The two types of security lighting most commonly used are incandescent or high-intensity discharge (HID) lamps. There are three types of HID lamps: mercury vapor, metal halide, and high-pressure sodium. The characteristics of these lights vary widely among different manufacturers. Individual manufacturers and vendors should be contacted regarding initial and O&M costs and performance efficiency of specific lamp models.

The incandescent or filament lamp is the most common, but HID lamps are more energy efficient. Incandescent lamps start quickly, and HID lamps tend to take from one to several minutes to start and from several minutes to 15 minutes to reach full intensity. HID lamps are more likely to create an audible hum. Advantages and disadvantages of each type are shown in Table 9-1.

9.6. SECURITY PATROLS

Including chemical storage and handling areas in routine base security patrols or dedicating security personnel to those areas during non-duty hours adds an extra level of security protection. Security personnel can be instructed to observe leaks from tanks, valves, or pipelines while patrolling the installation. Briefing security personnel on how recognizing potential spill situations and chemical hazards, on the location and operation of fire protection equipment and alarms, and on procedures to follow when a spill is detected, is also highly recommended.

Table 9-1
Lighting Type Characteristics

Lighting Type	Efficiency Rating (Lumens per Watt)	Life (Hours)	Other Considerations
Incandescent	10 to 20	1,000 to 3,000	inexpensive reliable good lighting control simple to install
Mercury vapor	32 to 63	24,000	low O&M cost initial high cost blue-green color requires complex starting equipment
Metal halide	80 to 125	4,500 to 20,000	restart time of 2 to 4 minutes restrike time of 10 to 15 minutes best overall color rendering extremely compact requires complex starting equipment
High-pressure sodium	40 to 140	24,000	restrike time of 1 minute most economical system based on total initial and O&M costs requires complex starting equipment emits an orange colored light.