

ALARM: Making Life-Safety Code Compliance Efficient and Easy

By The National Institute of Justice Staff

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Thanks to the National Institute of Standards and Technology (NIST) and the National Institute of Justice's Office of Law Enforcement Standards (OLES), correctional facility building managers seeking a streamlined method of bringing their facilities into safety compliance now have the opportunity to do so with a recently developed software package. ALARM 2.0 (Alternative Life-Safety Analysis for Retrofit-Cost Minimization) is a Windows-compatible software package that allows managers to conserve resources when complying with the National Fire Protection Association (NFPA) Life Safety Code (LSC).

Developed by NIST with support from OLES, ALARM is based on the fire safety worksheet for correctional facilities in the LSC manual. It uses spreadsheet software to perform calculations, which would take days to do by hand, in just moments and allows managers and safety officers to streamline the process of bringing facilities into compliance with LSC, one of the requirements to achieve American Correctional Association (ACA) accreditation.

NFPA offers two versions of LSC. NFPA 101, termed "prescriptive," gives detailed specifications of what must be done to achieve compliance. These specifications do not allow for flexibility, nor do they permit substitutions. The alternate version, NFPA 101A, on which the ALARM software is based, does not have fixed requirements. Instead, it uses 13 fire safety

parameters, including fire alarms, smoke detectors, automatic sprinklers and number of exits, with up to seven safety levels each. Compliance can be obtained through numerous point score combinations. For example, if more sprinklers are installed, less smoke control is needed.

"There are many ways to be in compliance," says Stephen Weber, head of the NIST team developing the software. "The idea is to earn enough points to be in compliance, but in the most economical way possible." According to Laura Schultz, designer of this version of ALARM, "Without [this] software, you could sit for days trying to hit the right combination."

Software Development

"Correctional facilities are like small towns. You have different buildings and different sites with different support functions," says Jack Harne, a correctional information specialist at the National Law Enforcement and Corrections Technology Center in Rockville, Md. This analogy also applies to health care facilities, where the rudiments of ALARM can be found. NIST developed the software under a Public Health Service grant in the 1980s and updated it in the 1990s. According to NIST documentation, from a sample of 89 hospitals that used ALARM in planning LSC compliance, the software identified plans that were, on average, 41 percent less costly than prescriptive compliance. This represents a total savings of more than \$37 million.

The move from hospitals to correctional facilities occurred because Weber noted that the chapter on correctional facilities in the LSC manual followed the same pattern as the chapter on hospitals. He began read-

ing and discovered similarities between the two types of facilities.

This led Weber to pitch the idea to OLES, and work began on the correctional facilities package in 1998. Beta testing (testing a product before it is widely disseminated) took place in early 2001 and feedback was used to develop the final product. When Weber contacted the Maryland Division of Corrections about beta testing, administrators were so impressed with ALARM's potential that all 17 facilities in the system became test sites. NIST also lined up sites in Ohio and Virginia, and ACA sent copies to facilities that applied for accreditation.

"The documentation reports produced by this software will help you explain why [funding is needed]," says Harne. LSC is so complex that "there is no way you could absorb everything. The software might help remind you of something you've forgotten to check on," says Harne. "By going this way," says Weber, "you save a lot of time and effort in achieving compliance."

Key Functions

A key function of this software is resolving the time issue. Because facilities receive separate LSC scoring for each building and each zone within a building (space separated by floors, horizontal exits or smoke barriers), and points must be earned in four categories (fire control, egress, refuge and general safety), days might seem like an optimistic estimate without ALARM. However, building managers and safety officers who use ALARM could have a proposed plan in less than one day if staff already have measured wall areas, counted exits and collected other necessary data.

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The intuitive nature of the user interface is another appealing factor of ALARM. According to Schultz, new users with prior spreadsheet experience should be able to learn the program quickly. ALARM's user interface includes cells for data entry that also perform complex mathematical calculations. Those new to the program will find that it functions in a similar manner to common spreadsheet applications. Similarly, the 32-bit software fits on one CD that provides simple installation instructions. A detailed user's manual walks newcomers through filling in background information such as size, current safety conditions and location. Providing location information allows ALARM to offer information regarding construction costs in the area. The software includes a sample project file that helps users learn about the program and a help system based on the LSC manual.

A color-coded main worksheet screen indicates the facility's current safety level, excluded options and options the user wants to consider. Options listed as excluded are alternatives that ALARM automatically excludes because they have lower safety ratings than the facility's current level, and any option the user chooses to exclude. The program further divides options still under consideration into those that lack data and those that are complete.

For example, a building manager considering an improved interior fin-

ish in corridors as a means of earning more points toward compliance might indicate that the current safety level is Class B. As a result, Class C would automatically be excluded because of its lower safety level. The manager then clicks on Class A, prompting ALARM to request the square footage that requires renovation. It then offers three options for coming into compliance: removing the existing Class-B finish to expose Class-A materials underneath, coating the Class-B interior finish or covering the Class-B material with drywall. The manager then can select an option based on rough cost estimates provided by ALARM. Bids from local contractors on options they want to consider also can be obtained and used in place of the rough estimates provided by the program.

When the building manager has entered data into all 13 LSC parameters, he or she selects the optimization feature. ALARM uses its color-coding function to highlight the options that will allow the facility to score enough points for compliance at the lowest cost. In addition to color coding on the data entry screen, the program provides a detailed report on the suggested lowest-cost plan.

"You then can show this to your budgeting people and say, 'We realize that we're out of compliance, and this is roughly what it will cost to

bring us into compliance,'" Schultz says.

There are many recognized benefits from ACA accreditation, including a safer environment for personnel and offenders. Compliance with LSC is one of the most important steps an administrator can take to ensuring that safety. The ALARM software can make taking that step as simple and effective as possible.

The complete ALARM 2.0 package with CD-ROM and user manual can be purchased for \$25 from the One-Stop Data Shop of NFPA. Contact NFPA at 617-984-7450; e-mail: osds@nfpa.org. ALARM 2.0 also may be purchased by calling ACA at 1-800-222-5646, ext 1860 or via e-mail: cservice@aca.org.

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