

ASSURANCE OF SAFETY AND SAFEGUARDS DURING AN EMERGENCY - LOCKING SYSTEMS

Description of Circumstances:

UNDER EMERGENCY CONDITIONS, PROMPT INGRESS INTO CERTAIN SAFETY-RELATED AREAS MUST BE ASSURED TO ENABLE SAFE SHUTDOWN OF A NUCLEAR POWER PLANT, AND UNIMPEDED EGRESS FROM ALL PARTS OF THE FACILITY MUST BE ASSURED IN THE INTEREST OF LIFE SAFETY. The circumstances described below indicate that prompt ingress and unimpeded egress under emergency conditions may not be assured at all nuclear power plants.

At one nuclear power plant, upon loss of offsite power resulting in a scram of the reactor, all electrically locked doors to vital areas failed for lack of auxiliary power. (Although, the electrical circuit blue prints indicated that the electrical locking system was connected to the vital bus to provide uninterrupted auxiliary power, the control console for the locking system had not in fact been so connected.) This failure delayed ingress by operations personnel into several safety-related areas because they had to await arrival of a guard with the one immediately available key. Other security keys were at the facility but were either secured or held by a person who was unaware of what the keys would unlock.

Concurrent with the above situation, three employees were isolated without an adequate emergency escape route available to them. The two accessible doors on that level had been secured, one by a failed electrical locking device and the other by a lock which could be opened only by the grand-master key which they did not possess. Further, the second door was blocked from the opposite side. The only other escape route which could be considered was an unenclosed stairwell leading to other levels, but it was blocked by hot water flowing from the turbine floor above. The employees telephoned for assistance and were released by a guard who came through the cable spreading room and opened the failed door from within.

During an NRC inspection at another nuclear power plant it was observed that two exterior emergency exit doors were chained and padlocked from within. Although the padlocks were of the "breakable" shackle type, substantial force would be required to break them and unimpeded egress in an emergency was not assured.

At a third nuclear plant, a technician conducting tests accidentally caused a scram, turbine trip, and loss of station power. Some electrical locking devices securing safety-related areas were supplied only from non-vital buses which were stripped of their loads in the process of

transferring to secondary power sources. The electrical locking devices failed and delayed the ingress of additional plant personnel to assist in the shutdown of the plant.

Finally, information available to the NRC indicates that licensees at many other nuclear power plants utilize or plan to utilize electrical locking devices for vital areas, protected areas, and nonsecurity areas. Some of the plants do not have auxiliary power for a portion of or all of the electrical locking systems, and these systems could fail in such a way that prompt ingress or unimpeded egress would not be assured.

Discussion of Applicable Requirements:

APPENDIX E of 10 CFR Part 50 provides that (a) the capability for plant evacuation, and (b) the capability for facility reentry in order to mitigate the consequences of an accident or, if appropriate, to continue operations, must be assured.

Electrical locks not provided with auxiliary power cannot be maintained in an operable condition (10 CFR 73.55(g)(1)), and electrical locks which fail in the open mode are not providing the required locking (73.55(d)(7)). It should be noted that the NRC is currently reviewing amended Security Plans submitted in response to the requirements of 10 CFR 73.55. That review will encompass prompt emergency ingress and unimpeded egress through security related doors in conjunction with positive access controls at facilities having an operating license.

The National Fire Protection Association Standard NFPA 101 is a generally accepted national standard known as the "Life Safety Code." NFPA 101 is the basis of certain regulations of the Occupational Safety and Health Administration (29 CFR 1910) and the fire regulations and life safety codes of a significant number of States. This standard addresses in detail the number, locations, widths, and routes to emergency exits. It further details safety requirements for stairwell escape routes, describes route and exit markings, and specifically instructs against the installation of a lock or other fastening on an emergency exit that would prevent escape from the inside of the building.

Action to be Taken by Licensee and Permit Holders:

1. Survey your facility and facility plans to determine whether the following situations exist:
 - a. Prompt emergency ingress into electrically locked safety-related areas by essential personnel is assured in any postulated occurrence through the combined use of features (1), (2), and (3) below or the equivalent.

- (1) Provide reliable and uninterruptable auxiliary power to the entire electrical locking system, including its controls; and
 - (2) Provide the electrical locking devices, which are required to fail in the secure mode for security purposes, with secure mechanical means and associated procedures to Override the devices upon loss of both primary and auxiliary power (e.g., key locks with keys held by appropriate personnel who know when and how to use them); and
 - (3) Provide periodic tests of all locking systems and mechanical overrides to confirm their operability and their capability to switch to auxiliary power.
- b. Unimpeded emergency egress is assured from all parts of your facilities, the security hardware and systems are designed and installed so as to not degrade life safety, and such hardware and systems are in conformance with applicable (State/Local) fire regulations and life safety codes.
2. Review existing emergency plans and procedures to assure that prompt emergency ingress and unimpeded emergency egress are fully and effectively addressed for any postulated occurrence.
 3. Assure that prompt emergency ingress and unimpeded egress through security doors at facilities with an operating license are thoroughly described in submittals pursuant to 10 CFR 73.55.
 4. In the event that surveys or reviews required by action items 1 and 2 establish that the facility does not meet the requirements noted in these items, holders of an operating license shall provide a written report to the appropriate NRC Regional Office within 45 calendar days of receipt of this Bulletin. The required report will clearly describe all identified problem areas together with proposed corrective actions. Holders of construction permits will respond in like manner within 60 calendar days of receipt of this Bulletin. If your facility is in full conformance with the requirements noted, no response to this Bulletin is required.

Approval by GAO, B180225 (R0072); clearance expires 7-31-80. Approval was given under a blanket clearance specifically for identified generic problems.

LISTING OF IE BULLETINS
ISSUED IN 1977

Bulletin No.	Subject	Date Issued	Issued To
77-07	Containment Electrical Penetration Assemblies at Nuclear Power Plants Under Construction	12/19/77	All Power Reactor Facilities with a Construction Permit
77-06	Potential Problems with Containment Electrical Penetration Assemblies	11/22/77	All Power Reactor Facilities with an Operating License (OL)
77-05A	Supplement 77-05A to IE Bulletin No. 77-05 - Electrical Connector Assemblies	11/14/77	All Power Reactor Facilities with an Operating License (OL) or Construction Permit (CP)
77-05	Electrical Connector Assemblies	11/8/77	All Power Reactor Facilities with an Operating License (OL) or Construction Permit (CP)
77-04	Calculational Error Affecting the Design Performance of a System for Controlling pH of Containment Sump Water Following a LOCA	11/4/77	All PWR Power Reactor Facilities with an Operating License (OL) or Construction Permit (CP)

LISTING OF IE BULLETINS
ISSUED IN 1977

Bulletin No.	Subject	Date Issued	Issued To
77-03	On-Line Testing of the W Solid State Protection System	9/12/77	All W Power Reactor Facilities with an Operating License (OL) or Construction Permit (CP)
77-02	Potential Failure Mechanism in Certain W AR Relays with Latch Attachments	9/12/77 ^u	All Holders of Operating Licenses (OL) or Construction Permits (CP)
77-01	Pneumatic Time Delay Relay Set Point Drift	4/29/77	All Holders of Operating Licenses (OL) or Construction Permit (CP)