UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 818
ATLANTA, GEORGIA 30303

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March 18, 1977

In Reply Refer To:
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50-390 50-296
50-391

Tennessee Valley Authority
ATTN: Mr. Godwin Williams, Jr.
Manager of Power
830 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

The enclosed IE Circular, 77-04 is forwarded for your information and use. The subjects covered by this Circular should be helpful to you in properly implementing the physical security systems needed for your facility to meet the requirements of 10 CFR Part 73. The illustrated Appendix is provided for the sake of clarity and does not constitute an endorsement of any manufacturer's specific product.

No written report to the NRC is required by this Circular. If you have any questions concerning this matter, contact the Director of this NRC Regional Office.

Sincerely,

Norman C. Moseley
Director

Enclosure:
IE Circular 77-04
Inadequate Lock Assemblies
with Appendix A

AO 2
GD

Nuclear Regulatory Commission
Office of Inspection and Enforcement
Washington, D. C. 20555

IE Circular No. 77-04 Date: March 18, 1977

INADEQUATE LOCK ASSEMBLIES

DESCRIPTION OF CIRCUMSTANCES:

During recent physical security inspections at nuclear fuel cycle and reactor facilities, it was discovered that the lock assemblies securing some material access areas and vital areas were inadequate, improperly installed, or inoperable for a lack of maintenance. In a number of instances, the deficiencies were cited as items of noncompliance. The specific findings included:

(a) Doors secured only with locks having simple spring latches which could be readily depressed with a piece of plastic, a card, knife, or other thin instrument.

(b) Doors secured with locks having dead latches which were ineffective due to poor installation or lack of maintenance. The installation tolerances for a dead latch are very critical and their anticipated service life quite limited.

(c) Outswinging doors and inswinging double-doors without mullions, which were not equipped with astragals or guard plates to deter forcible attacks upon the latch or bolt.

(d) Exterior or exposed lock cylinders which were not equipped with effective collars or cylinder guards to deter forcible attacks upon the cylinders.

(e) Doors secured only by lock sets with cylinders mounted within the door knobs, making the doors very vulnerable to forcible attack.

(f) Lock sets which did not engage their associated strike plates due to incorrect installation, adjustment, maintenance, or damage.

(g) Doors without locks.

DISCUSSION:

10 CFR 73.2(f)(2) requires that openings in building walls be of construction and fastening of sufficient strength so that the intergrity of the wall is not lessened by the opening. This requirement extends to vital areas (10 CFR 73.2(h)) and material access areas (10 CFR 73.2(j)). Thus, door locks must be of substantial construction and of such design, installation, and reinforcement that their neutralization or circumvention by common burglary techniques is precluded. Regulatory Guide 5.12, the Federal crime insurance guidelines, recent municipal codes and ordinances, and generally accepted practices within the profession of industrial building design and construction, advise that doors must be secured with a dead bolt. Further, in recognition of widely disseminated and publicized simple burglary techniques which can be accomplished with common tools without skill, the following limiting factors must be considered in determining whether the intergrity of a vital area or material access area wall is maintained:

(a) The door is secured with a dead bolt with either a one inch lateral throw or multiple-vertical engagements with its strike.

(b) Outswinging doors and inswinging double-doors without mullions, are equipped with securely mounted astragals or guard plates.

(c) Exterior or exposed cylinders are rim, bored-auxiliary, or mortise lock mounted, and are protected with (1) a cylinder guard or (2) substantial collar which is tapered, extends beyond the face of cylinder, and rotates independently when torque is applied.

(d) All lock sets and associated hardware are effectively installed and maintained.

Hardware illustrations and standard lock terminology are enclosed as Appendix A.

POSSIBLE SOLUTIONS:

The identified generic deficiencies may be eliminated by the comprehensive implementation of one or more of the following solutions, in consonance with the operational and safety considerations of the facility.

(a) Institute measures to assure conformance with the four limiting factors cited in the Discussion paragraph, above.

(b) Obviate lock inadequacies by barring the door from within with a wooden (min. 2" x 4") or pipe (min. 2" dia.) member extending solidly across both stiles and jambs.

(c) Obviate lock and other possible deficiencies by eliminating the doorway and filling the resulting cavity with masonry or construction materials equal to or exceeding the composition of the wall.

This information is provided for action you deem appropriate to insure that vital area and material access area doors are secured in a manner which does not lessen the integrity of the walls and other physical barriers.

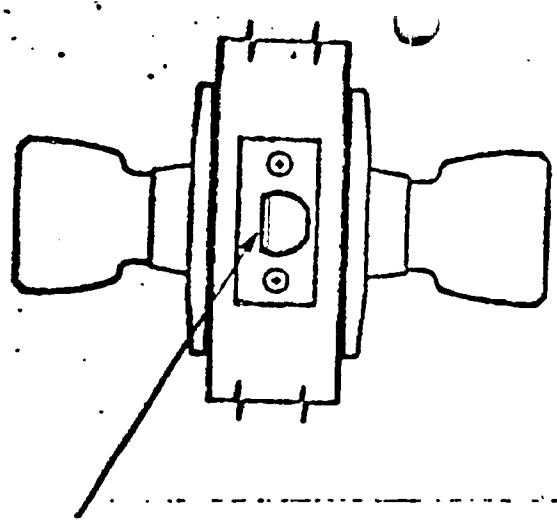


FIGURE 1
LATCH

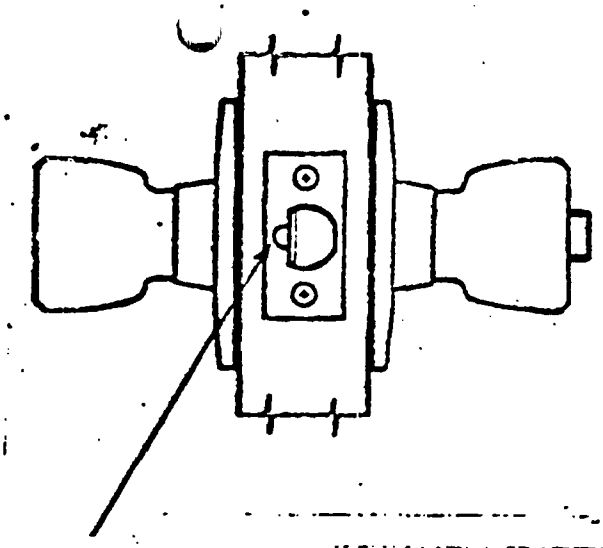


FIGURE 2
DEAD LATCH

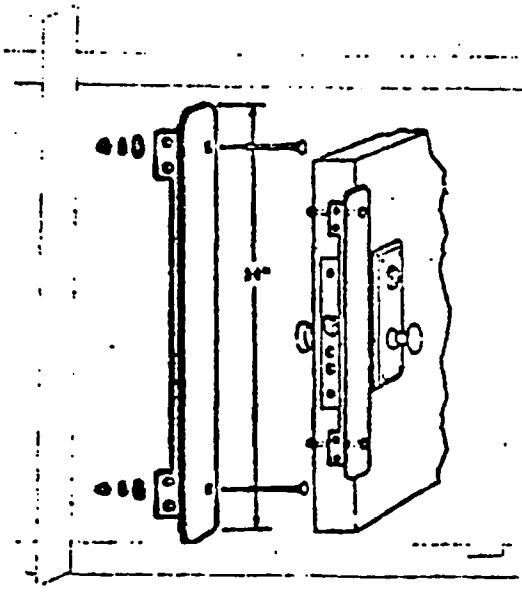
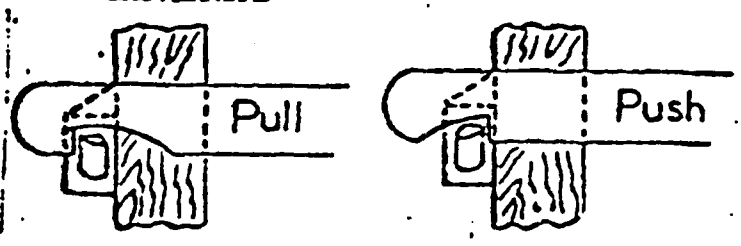


FIGURE 3
TYPICAL ASTRAGAL
OR GUARD PLATE

FIGURE 4
USE OF A
"SHOVEKNIFE"



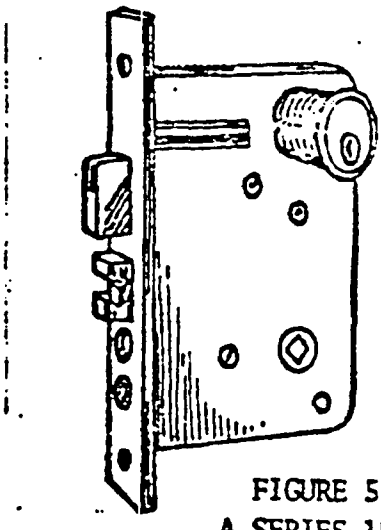


FIGURE 5
A SERIES 1000
MORTISE LOCK
AND LATCH SET

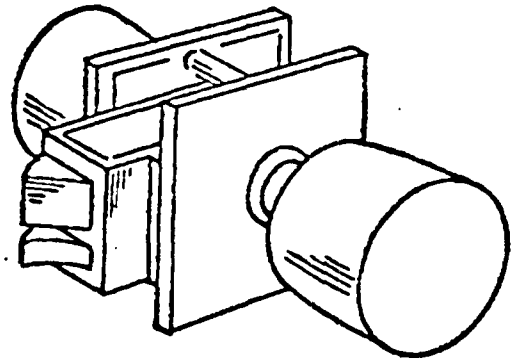


FIGURE 6
A SERIES 2000 PRE-ASSEMBLED
LOCK AND LATCH SET

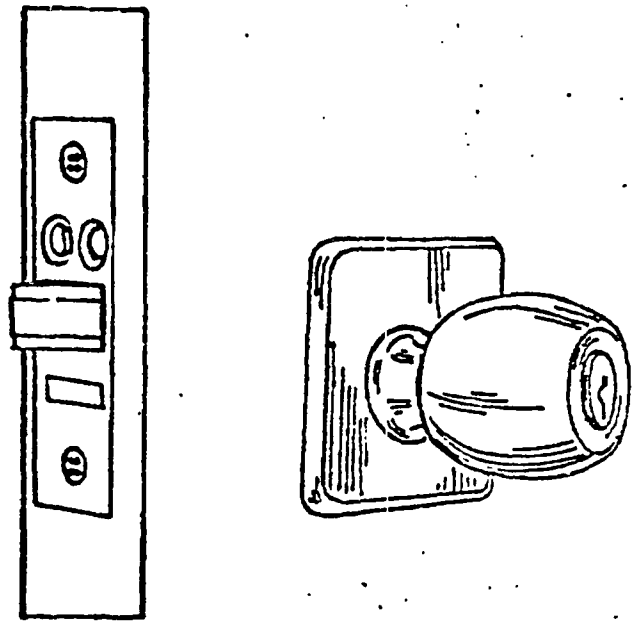


FIGURE 7
A SERIES 3000 INTEGRAL
LOCK AND LATCH SET

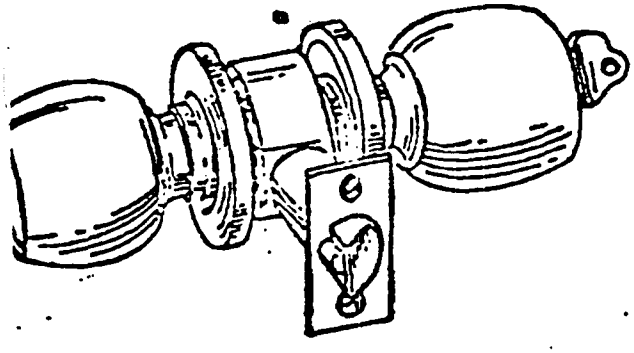


FIGURE 8
A SERIES 4000 BORED
LOCK AND LATCH SET

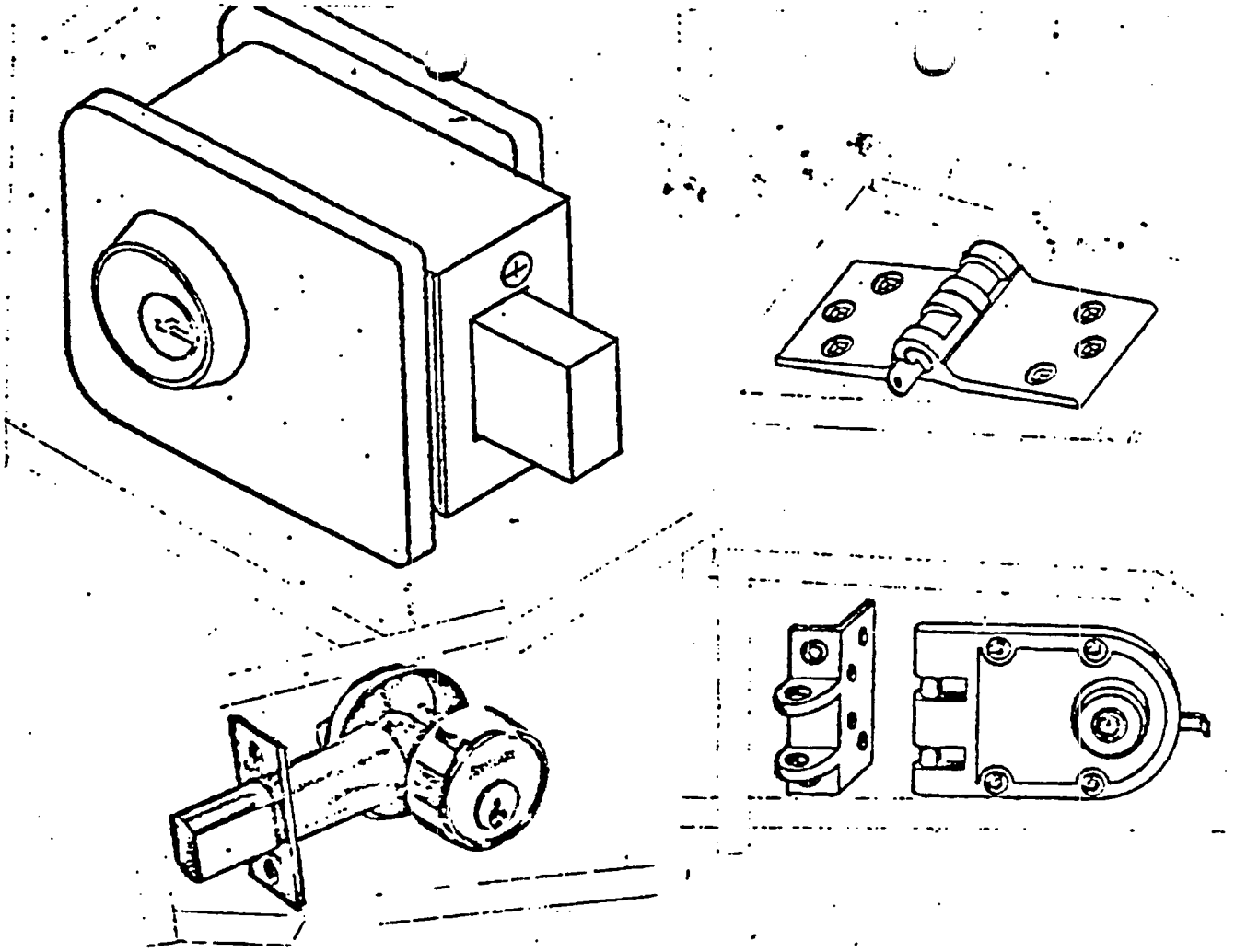


FIGURE 9
TYPICAL AUXILIARY DEAD LOCKS

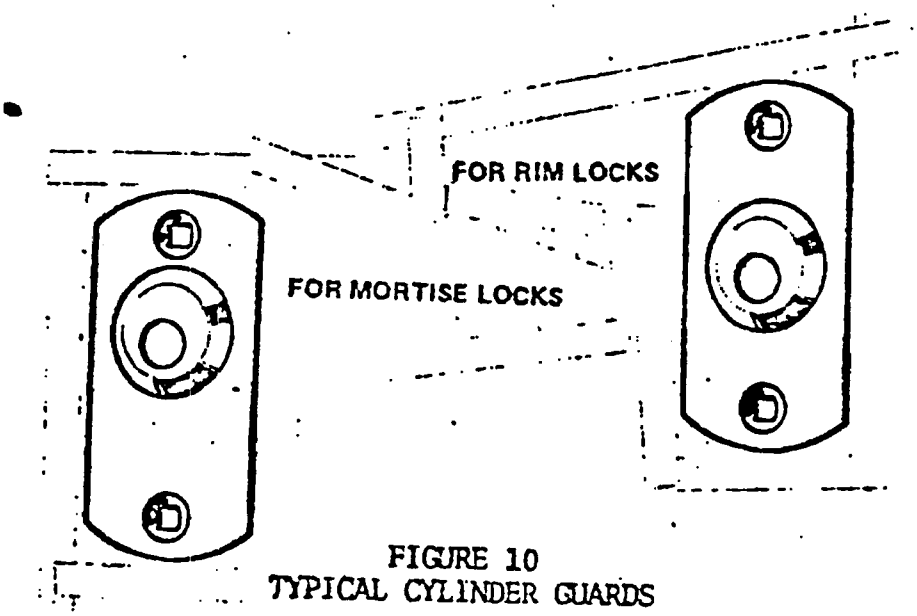
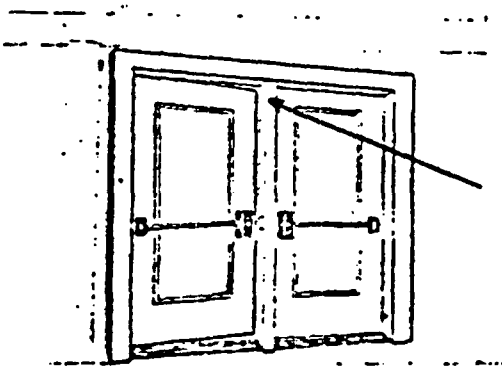
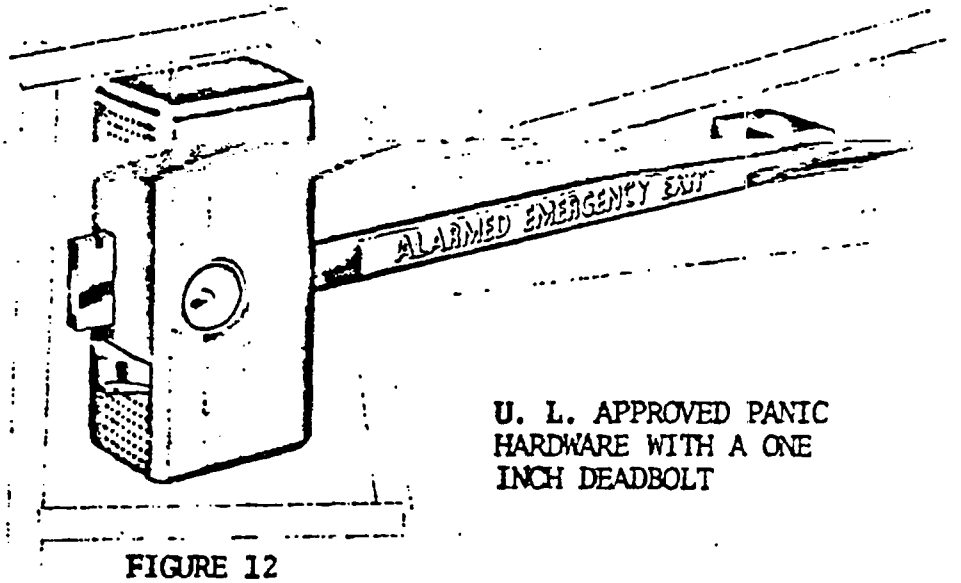


FIGURE 10
TYPICAL CYLINDER GUARDS



MULLION: STRUCTURAL DIVIDER BETWEEN A PAIR OF DOORS

FIGURE 11



U. L. APPROVED PANIC HARDWARE WITH A ONE INCH DEADBOLT

FIGURE 12