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September 29, 1988

Mr. A. Bert Davis
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Zion Nuclear Power Station Units 1 and 2
Response to Allegation (RIII-A-88-0086)
License Nos. DPR-39 and DPR-48
NRC Docket Nos. 50-295 and 50-304

Reference: August 8, 1988 letter from C. Norelius to Cordell Reed.

Dear Mr. Davis:

This letter provides a response to Allegation No. RIII-A-88-0086 concerning the operation of Vital Area Door [redacted] (incorrectly identified as Door [redacted] in the Allegation). A 15-day extension was granted on September 9, 1988 via a telephone conversation between J. Creed and P. Laird.

The Attachment to this letter contains Safeguards Information as defined in 10 CFR 73.21. Accordingly, the information in the Attachment should be withheld from public disclosure.

If you have any further questions regarding this matter, please direct them to Commonwealth Edison's Nuclear Licensing Department.

Very truly yours,

F. G. Lentine

for H. E. Bliss
Nuclear Licensing Administrator

lm

Attachment

SECURITY MARKING DOES NOT APPLY WHEN THIS LETTER IS SEPARATE FROM THE ENCLOSURE

5184K

rec'd Sept 29 6pm

ATTACHMENT
RESPONSE TO ALLEGATION RIII-88-A-0086

Introduction

Vital Area Door [redacted] (actually noted as Door [redacted] in the allegation summary) is the South Door of the Zion Station [redacted]. This door leads from the [redacted] to a small vestibule. Three other doors open into this vestibule which provides access to the [redacted] (see attachment 'A').

All doors leading into this vestibule provide passage to locations within the vital area of the plant and are not protected area to vital area portals. Of the four doors leading into this vestibule, only Door [redacted] is equipped with a [redacted] The other doors are normally closed and unlocked.

Door [redacted] is a double door of bullet resistant construction. Both sections of the door are alarmed with [redacted] alarms and equipped with a [redacted] alarm. All alarms generated from these devices are annunciated in [redacted]

The normally passive half of Door [redacted] is secured in place by [redacted] The other section of the door is equipped with a card reader, secured by a [redacted] and must be manually opened by the user upon receipt of a signal that the door is unlocked.

The security computer has been programmed to establish a [redacted] This is consistent with the door [redacted] established for all cardreader controlled doors at Zion Station. A programmed [redacted] establishes the time [redacted] If this time [redacted] the computer generates a door alarm.

If the door fails to lock or if the door is not closed within [redacted] an alarm is received. The computer does not distinguish between these types of alarms during the annunciation and recording process.

Details:

1. Provide determination of whether or not Door [redacted] closes all the way automatically.

   After each use, Door [redacted] is designed, through the assistance of a hydraulic closure, to return to the closed position whereby the [redacted] secures the door.

   In many instances, especially during April, May and June of 1988, Door [redacted] did not always close within the allocated door delay of [redacted]. Once the [redacted] is exceeded, an alarm is received. Mechanical failure also contributed to the number of alarms received on Door [redacted] However, in all cases, when Door [redacted] did not perform within specifications, an alarm was received and a security officer was dispatched to respond to the alarm and investigate the situation.

The analysis on alarms received on Door [redacted] from January through June of 1988, reveals the preponderance of alarms occurred because the door [redacted] not because the door failed to close and lock automatically. In fact, [redacted] of the time, Door [redacted] was locked and the alarm had reset by the time the responding guard arrived.

2. If you find the door does not close automatically, provide the reason for the malfunction.

During the period from January through June 1988, records reveal Door [redacted] was used approximately 94,290 times. (The alarm history for Door [redacted] is documented under section 4 of this response.)

The number of alarms associated with Door [redacted] throughout the first six months of 1988 and especially during April, May and June was a concern to the station security staff. From January through June 1988, members of the security staff logged approximately 25 visits to Door [redacted] in order to determine the cause of the extraordinary number of alarms. Security Management also measured the existing air pressure forces acting on Door [redacted]

Investigation revealed Door [redacted] would close properly without an alarm when tested by the station security staff. The condition causing the alarm could not be identified to duplicate the alarm during the test sequence. When an equipment malfunction caused an alarm condition, a work request was written and repairs were completed in a timely fashion.

The following is a list of work requests written to repair Door [redacted] security related equipment:

Date of Work Request	Date of Repair	Work Done
January 11, 1988	January 12, 1988	Replaced [redacted]
January 21, 1988	January 22, 1988	Replaced
March 5, 1988	March 5, 1988	Replaced
March 13, 1988	March 15, 1988	Replaced
March 24, 1988	March 31, 1988	Replaced
---	April 14, 1988	Replaced
June 13, 1988	June 14, 1988	[redacted] Repair
June 17, 1988	June 29, 1988	Adjusted [redacted]
---	June 22, 1988	Replaced [redacted]
June 28, 1988	June 28, 1988	[redacted] Repair

An analysis of the problem fixes the root cause of the repetitive alarms on Door [redacted] to be excessive air pressure. The air pressure acting on the door against the force exerted by the hydraulic closure caused two types of recurring alarms on Door [redacted]

A. The air pressure slowing the closing of the door beyond the allocated [redacted] appears to be the most frequent cause of the door alarms and comprised [redacted] of this problem. By the time the responding security officer arrived on the scene, the door closure had overcome the air pressure, the door was secure and the alarm reset.

Air pressure was a variable factor and the amount of pressure at any given time was dependent upon the HVAC system alignment, operation of Auxiliary Building supply fans, outside wind speed and direction, Turbine Building window position, the position of Turbine Building and Auxiliary Building roll-up and missile doors and the open or closed condition of other plant doors adjacent to Door [redacted]

B. Once Door [redacted] was closed and locked, air pressure would at times cause the door to vibrate, which would be sensed by the limit switches and created an alarm condition, even though the door was fully secure. This condition was confirmed through visual observation.

There was another generic cause of alarms on Door [redacted]. The openings and closings associated with the daily traffic through Door [redacted] (approximately 525 per day), caused wear and tear on various door parts and components. The failure of this hardware also contributed to the number of alarms received at Door [redacted]

Most often, these failures were quickly diagnosed and timely repairs were made. Other failures were intermittent or gradual deteriorations that were not readily evident when the door was inspected to determine the cause of the alarms.

Of the 94,290 recorded uses of Door [redacted] during the January-June 1988 time period, alarms occurred approximately [redacted] of the time.

3. (Provide) a description of measures being taken to correct the problem.

Excessive air pressure which resisted the ability of the hydraulic closure to shut the door in a timely manner was the cause of the excessive alarms on Door [redacted]

This was an abnormal condition caused in part by work being done on the HVAC system and the ensuing re-alignment of air handling equipment and vent dampers.

Once the HVAC system alignment was completed during the first week of July, the inordinate air pressures acting on Door [redacted] abated and the repetitive alarm problem was resolved. Evidence of this is the reduced number of alarms received in July (81) and August (23).

The following corrective actions were taken in response to the alarms on Door [redacted]

A. Weather stripping to reduce air flow through other adjacent and remote closed doors (which could affect Door [redacted]) was repaired and/or replaced.

B. Rubber door bumpers were replaced on Door [redacted]. Bumpers are utilized to assist in holding the door firmly in place and inhibit door vibration once the door is closed. The vibration no longer exists.

C. The supplier of the door hardware was contacted on several occasions and verified the door closure currently installed on Door [redacted] is the proper model for this application.

D. The station is arranging to install a special "spring assist" closure device to overcome any potential air pressure problem which may be encountered in the future. This spring assist is designed to operate in conjunction with the existing closure in order to close the door in a timely manner.

It should be noted that once an [redacted] failure was identified which caused excessive door alarms, the repair was punctual.

4. (Provide) an analysis of your review of alarms received for Door [redacted] for the period January 1, 1988 - June 20, 1988.

This analysis was compiled by a manual review of computer generated alarm history for Vital Door [redacted] (refer to attachment 'B').

This review indicates that all alarms received during this time period for Door [redacted] were received, acknowledged, dispatched, responded to and properly documented.

All alarms received were processed in less than five minutes. In some instances, several alarms may have been received from one device before the arrival of the responding guard. An example of this would be a locked door where air pressure would cause the door to vibrate. An alarm device would sense the vibration as one or more alarms, reset and repeat this process.

5. (Provide) a description of compensatory measures required to be implemented when the door fails to close automatically.

Section 7.3.7 of the Zion Station Security Plan states, "a [redacted] or [redacted], with [redacted] capability with [redacted], is [redacted] at an [redacted]."

The repetitive alarms associated with Door [redacted] especially during April, May and June, were attributed to the fact that the door was not closing in less than [redacted] Once the door closed, it was properly secure.

The Zion Station Security Plan does not contain specific compensatory measures to be implemented for a door which alarms due to the fact that the door did not close prior to the allocated door delay time.

However during the period of time in question, a security officer responded to each alarm received. The door alarm was cleared, verified secure and the alarm reset prior to the guard leaving the door.

Zion posted a highly visible sign on Door [redacted] instructing personnel not to leave the door until a closed and secure status is verified.

6. (Provide) a description of training given to employes regarding their responsibilities on ensuring that security doors are properly closed.

The Nuclear General Employe Training booklet, which is made available annually to all badged individuals at the plant, instructs all personnel entering and exiting vital area to promptly close doors to prevent alarms. The booklet also states that if a security door is held open too long, an audible and visual alarm will be activated in the Security Control Room.

A special instruction to all plant personnel, signed by the Station Manager, stipulates that an individual using a vital door should not leave the door until the door is verified closed and secure. This instruction is given to an individual when they receive a photo I.D. badge and whenever a new badge is issued.

Conclusion

There was an extraordinary number of door alarms received on Door [redacted] during the first six months of 1988.

The cause of the overwhelming majority of these alarms was an inordinate amount of air pressure which delayed the closing of the door within the allocated [redacted] or which caused the closed and locked door to vibrate in place.

Once the evasive air pressure problem was overcome, the number of door alarms decreased significantly.

All alarms received on Door [redacted] were received, acknowledged, responded to in a timely manner and properly documented. Even during the periods of highest alarm activity, all door responses were accomplished within five minutes.

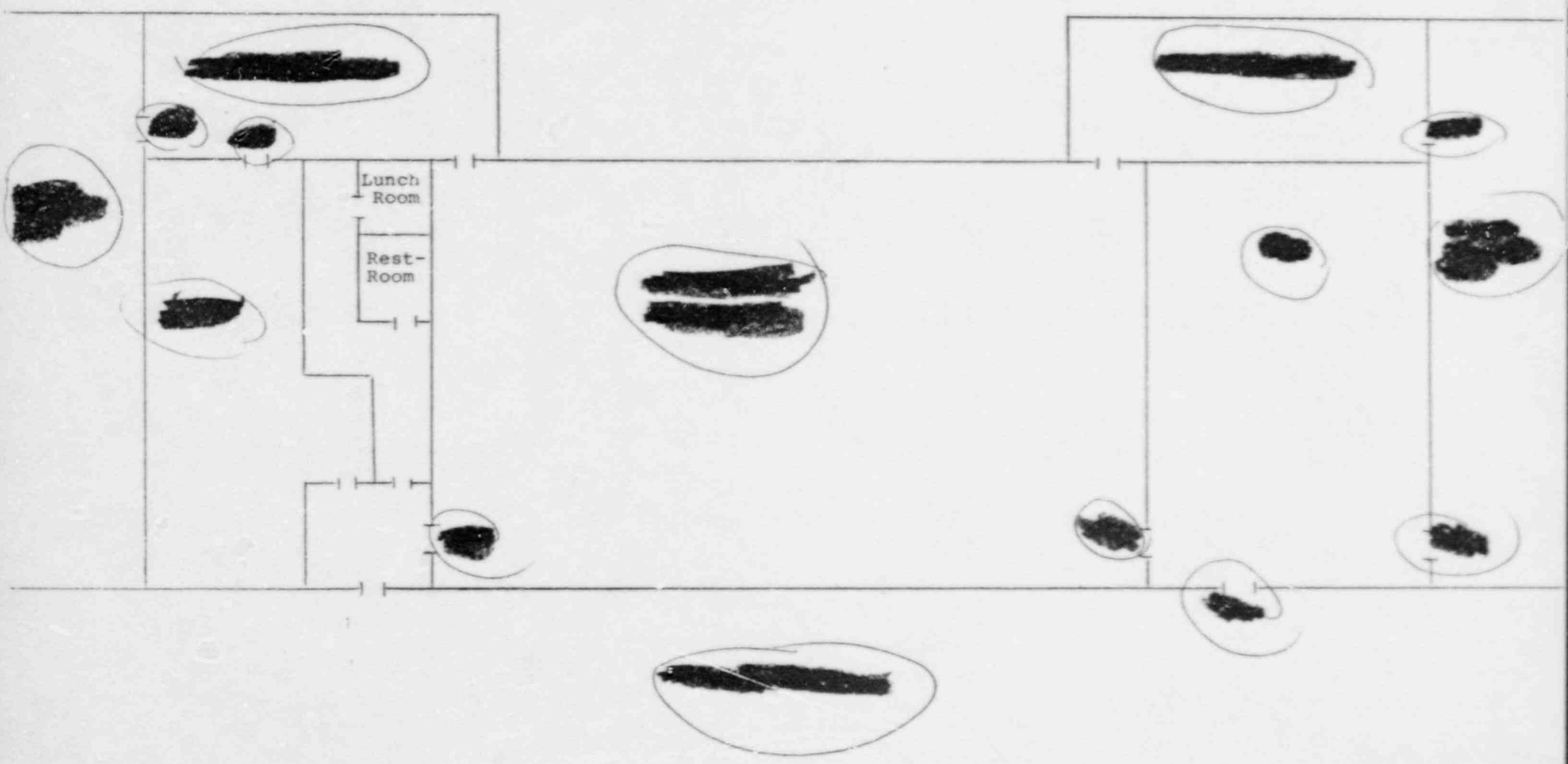
Of the 3,790 alarms recorded during the six month period January-June 1988, the door was closed, locked and alarmed when the guard arrived at the door [redacted] of the time; an additional [redacted] of the alarms occurred during supervised tests of the door and another [redacted] of the alarms occurred while a guard was posted at Door [redacted]

Control Room personnel could have ensured that Door [redacted] was closed behind them, however, if more than [redacted] had elasped since the electric strike opened, the door would still alarm. These alarms could have occurred one or two dozen times per shift, but in each case, response to the alarm was timely and proper.

Since Vital Door [redacted] was a vital door well within and surrounded by the vital area and the Station Security Force quickly responded to each alarm, appropriate compensatory measures were enacted.

Investigation failed to identify any inconsistencies in implementing established security procedures at Zion Station.

ATTACHMENT 'A'



ATTACHMENT 'B'

[redacted]
NO. 1

ALARM ANALYSIS
VITAL AREA DOOR [redacted]

Alarms	Jan.	Feb.	March	April	May	June	TOTAL
Door locked and alarm reset before arrival of guard	300	15	119	976	577	662	2,649
Supervised door tests	50	60	29	56	19	37	251
Alarms while guard posted	81	16	40	122	51	79	389
Alarm reset in [redacted] (reset after arrival of guard)	52	1	8	56	43	75	235
Alarm reset in [redacted] (reset after arrival of guard)	31	0	8	56	55	47	197
Alarm reset in [redacted] (reset after arrival of guard)	7	0	2	13	18	17	57
Alarm reset in [redacted] (reset after arrival of guard)	1	0	0	0	2	4	7
Alarm reset in [redacted] (reset after arrival of guard)	0	0	0	0	3	2	5
TOTAL	522	92	206	1,279	768	923	3,790