

February 2, 1983

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Docket Nos. 50-237/249
LS05-83-02-007

Mr. L. DelGeorge
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. DelGeorge:

SUBJECT: FIRE PROTECTION - REQUEST FOR EXEMPTION FROM REQUIREMENTS OF
APPENDIX R TO 10 CFR 50, SECTION III.G

Dresden Nuclear Power Station, Unit Nos. 2 and 3

The Commission has issued, in Enclosure 1, ten exemptions to certain requirements of Appendix R to 10 CFR 50 in response to your letter dated July 1, 1982. These exemptions pertain to fire protection of safe shutdown capability.

In the July 1, 1982 letter Commonwealth Edison requested 13 exemptions from 10 CFR Part 50, Appendix R, Item III.G for the Dresden Nuclear Power Station, Units 2 and 3. That equipment requiring fixed suppression as defined in Section III.G.3 for which an exemption was requested is listed below:

1. All panels located in the control room
2. 4KV SWGR's 23 and 24
3. 4KV SWGR's 23-1 and 24-1
4. 480V SWGR's 28 and 29
5. 480V MCC's 28-7 and 29-7
6. 250V MCC's 2A and 2B
7. 125V Distribution Panels 2A and 2B
8. 4KV SWGR's 33 and 34
9. 4KV SWGR's 33-1 and 34-1
10. 480V SWGR's 38 and 39
11. 480V MCC's 38-7 and 39-7
12. 250V MCC's 3A and 3B
13. 125V Distribution Panels 3A and 3B

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A total of 10 exemptions were analyzed because the pairs consisting of items 4 and 6, 7 and 13, and 10 and 12 were treated as single items since each pair is located in a single fire area.

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Mr. L. DeGeorge

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February 2, 1983

We have granted the enclosed exemption from the requirements of 10 CFR Part 50, Appendix R, Item III.G.3 per your request. The basis for this Exemption are given in the enclosed Safety Evaluation.

The Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Enclosures:

- 1. Exemption
- 2. Safety Evaluation

cc w/enclosures:
See next page

OFFICE	DL: ORB #5	DL: ORB #5	DL: ORB #5	OELD	DL: ORB #5	DL: AD/SA	DL: DIR
SURNAME	HSmith	RGilbert	Twambach		DCrutchfield	FMFaglia	DEisenhut
DATE	1/27/83	1/19/83	1/19/83	1/20/83	1/28/83	1/21/83	2/1/83

Mr. L. DelGeorge

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February 2, 1983

cc

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Plant Superintendent
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U. S. Nuclear Regulatory Commission
Resident Inspectors Office
Dresden Station
RR #1
Morris, Illinois 60450

Chairman
Board of Supervisors of
Grundy County
Grundy County Courthouse
Morris, Illinois 60450

Illinois Department of Nuclear Safety
1035 Outer Park Drive, 5th Floor
Springfield, Illinois 62704

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
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Chicago, Illinois 60604

James G. Keppler, Regional Administrator
Nuclear Regulatory Commission, Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
COMMONWEALTH EDISON COMPANY)	Docket Nos. 50-237 and 50-249
)	
(Dresden Nuclear Power Station,)	
Units Nos. 2 and 3))	

EXEMPTION

I.

Commonwealth Edison Company (the licensee) is the holder of a Provisional Operating License No. DPR-19 and Facility Operating License No. DPR-25 which authorize operation of the Dresden Nuclear Power Station, Units 2 and 3, respectively (Dresden or the facilities). These licenses provide, among other things, that the facilities are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facilities are boiling water reactors located at the licensee's site in Grundy County, Illinois.

II.

Section III.G.3 of Appendix R to 10 CFR 50 requires, among other things, that a fire detection system and a fixed fire suppression system shall be installed in the area, room or zone for which alternative safe shutdown capability has been provided.

The licensee, in a July 1, 1982 submittal, requested exemptions for the following equipment.

1. All panels located in the control room
2. 4KV SWGR's 23 and 24
3. 4KV SWGR 's 23-1 and 24-1
4. 480V SFR's 28 and 29

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5. 480V MCC's 28-7 and 29-7
6. 250V MCC's 2A and 2B
7. 125V Distribution Panels 2A and 2B
8. 4KV SWGR's 33 and 34
9. 4KV SWGR's 33-1 and 34-1
10. 480V SWGR's 38 and 39
11. 480V MCC's 38-7 and 39-7
12. 250V MCC's 3A and 3B
13. 125V Distribution Panels 3A and 3B

The licensee in the same submittal indicated the following as a basis for its exemption request:

- All equipment requiring fixed suppression as defined in Section III.G.3 for which an exemption was requested is critical to the power distribution necessary for normal and emergency operation of safety related equipment for Units 2 and 3.

- The inadvertent actuation of any fixed water suppression system located over this power distribution equipment could result in the fault or failure of that equipment. Installation of any type of fixed suppression system other than water, such as cardox, halon or foam, would be ineffective or inappropriate for the areas in which the equipment listed above is located or for the type of fire likely to occur in the area. All such equipment is in high traffic areas which are currently provided with fire detection and manual suppression systems. Furthermore, the existing fire detection and suppression systems currently installed in the areas containing the equipment listed above have been reviewed and approved by the NRC in the Dresden Station, Units 2 and 3 Fire Protection SER. As the probability of inadvertent actuation of a

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fixed suppression system is of far greater magnitude than the probability of occurrence of a fire severe enough to require the use of the alternate shutdown method independent of the fire area, Commonwealth Edison feels that the installation of such fixed suppression systems would only result in a decrease in plant safety.

The NRC staff has evaluated the licensee's fire hazards analysis for these areas and has made the following determinations. All of the fire zones for which exemptions have been requested represent a similar configuration, i.e., combustible loading is light, there is alternate shutdown capability, smoke detection, and manual fire suppression equipment is available. There is, therefore, reasonable assurance that a fire in any of these areas would be promptly detected and extinguished. The low combustible loading in these areas ensures that safety related equipment in adjacent areas will not be threatened. The installation of a fixed fire suppression system will not significantly increase the level of fire protection in these areas.

Based on our evaluation, described in Enclosure 2 to the letter transmitting this exemption, we find that the existing fire protection in conjunction with alternate shutdown capability in the areas for which an exemption has been requested provides a level of fire protection equivalent to the technical requirements of Section III.G.3 of Appendix R, and therefore, the exemptions should be granted.

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III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, these exemptions are authorized by law and will not endanger life or property or the common defense and security, are otherwise in the public interest, and hereby grants exemptions for the areas described in Section II above from that portion of Section III.G.3 of Appendix R which requires that a fixed fire suppression system shall be installed in the area, room or zone for which alternate safe shutdown capability has been provided.

The Commission has determined that the granting of this Exemption will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Darrell G. Eisenhut, Director
Division of Licensing

Dated at Bethesda, Maryland
this 2nd day of February, 1983



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

APPENDIX R REVIEW

COMMONWEALTH EDISON COMPANY

DRESDEN NUCLEAR POWER STATION, UNIT NOS. 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 Introduction

By letter dated July 1, 1982 the licensee requested 11 exemptions from the technical requirements of Section III.G of Appendix R to 10 CFR 50. By letter dated September 23, 1982 the licensee provided additional information.

Section III.G.2 requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by one of the following means:

- a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;
- b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or
- c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in fire area.

If these conditions are not met, Section III.G.3 requires alternative shutdown capability independent of the area of concern. It also requires a fixed suppression system in the fire area of concern if it contains a large concentration of cables or other combustibles. These alternative requirements are not deemed to be equivalent; however, they provide equivalent protection for those configurations in which they are accepted.

Because it is not possible to predict the specific conditions under which fires may occur and propagate, the design basis protective features are specified in the rule rather than the design basis fire. Plant specific features may require protection different than the measures specified in Section III.G. In such a case, the licensee must demonstrate, by means of a detailed fire hazards analysis, that existing protection or existing protection in conjunction with proposed modifications will provide a level of safety equivalent to the technical requirements of Section III.G of Appendix R.

In summary, Section III.G is related to fire protection features for ensuring that systems and associated circuits used to achieve and maintain safe shutdown are free of fire damage. Fire protection configurations must either meet the specific requirements of Section III.G or an alternative fire protection configuration must be justified by a fire hazard analysis.

Our general criteria for accepting an alternative fire protection configuration are the following:

- . The alternative assures that one train of equipment necessary to achieve hot shutdown from either the control room or emergency control stations is free of fire damage.

- . The alternative assures that fire damage to at least one train of equipment necessary to achieve cold shutdown is limited such that it can be repaired within a reasonable time (minor repairs with components stored on-site).

- . Fire retardant coatings are not used as fire barriers.
- . Modifications required to meet Section III.G would not enhance fire protection safety above that provided by either existing or proposed alternatives.
- . Modifications required to meet Section III.G would be detrimental to overall facility safety.

2.0 Discussion

Exemptions are requested from the fixed fire suppression requirement in Section III.G.3.b of Appendix 'R' to 10 CFR 50 for fire zones for which alternate shutdown capability has been provided. The equipment locations requiring fixed suppression as defined in Section III.G.3.b for which an exemption is requested are:

1. All panels located in the control room
2. 4KV SWGR's 23 and 24
3. 4KV SWGR's 23-1 and 24-1
4. 480V SWGR's 28 and 29
5. 480V MCC's 28-7 and 29-7
6. 250V MCC's 2A and 2B
7. 125V Distribution Panels 2A and 2B
8. 4KV SWGR's 33 and 34
9. 480V SWGR's 33-1 and 34-1
10. 480V SWGR's 38 and 39
11. 480V MCC's 38-7 and 39-7
12. 250V MCC's 3A and 3B
13. 125V Distribution Panels 3A and 3B

A brief description of each equipment location follows:

All Panels Located in the Control Room

The Dresden Unit 2 and 3 and Dresden Unit 1 control rooms form a combined control room that is separated from the remainder of the respective plant areas by a concrete and concrete block wall that has a 3-hour fire rating. The floor and ceiling are of concrete construction.

The control room has a fire detection system, hose station, and fire extinguishers. An alternative safe shutdown system is also available for the control room. The room is continuously manned and the fire load in the control room is low.

4KV SWGR's 23 and 24

This equipment is located in fire zone 8.2.6.a - turbine building mezzanine floor at elev. 538'. This fire zone is separate from other fire zones by spatial separation and by a concrete floor and ceiling supported on exposed structural steel. The floor and ceiling have numerous penetrations for stairwells, equipment removal hatches and pipe and electrical penetrations. The pipe and electrical penetrations are sealed. The combustible loading in the location of the switchgear is light and consists primarily of cable insulation, uniformly distributed. Detection, portable fire extinguishers and manual hose stations are provided in the area.

4KV SWGR's 23-1 and 24-1

This equipment is located in fire zone 1.1.2.3 - reactor building mezzanine floor at elevation 545'-6". This fire zone is separated from the adjoining fire zones in the reactor building (Zone 1.1.2.2 - ground floor elevation 517 feet - 0 inch and Zone 1.1.2.4 - main floor elevation 570 feet - 0 inch) by both spatial separation and a

structural concrete floor and ceiling. The floor and ceiling have penetrations for stairways, equipment access ways, piping penetrations, and electrical penetrations. Fire stops are provided on all electrical penetrations.

The 4-kV switchgear 23-1 and 24-1 are separated by a partial fire wall with an open accessway through it.

The combustible loading in this zone is light and consists primarily of cable insulation. A detection system, portable fire extinguishers, and manual hose stations are provided in the area.

480V SWGR's 28 and 29 and 250V MCC's 2A and 2B

This equipment is in fire zone 1.1.2.4 - reactor building main floor elev. 570'. This fire zone is separated from the adjoining fire zones in the reactor building (Zone 1.1.2.3 - mezzanine floor elevation 545 feet - 6 inches and Zone 1.1.2.5 - reactor floor elevation 589 feet - 0 inch) by both spatial separation and a structural concrete floor and ceiling. The floor and ceiling have penetrations for stairways, equipment access ways, piping penetrations, and electrical penetrations. The combustible loading in this zone is light. Portable fire extinguishers and manual hose stations are provided in the zone. A fire detection system is provided in the vicinity of the 480V switchgear.

480V MCC's 28-7 and 29-7

This equipment is located in fire zone 1.1.2.2 - reactor building ground floor elev. 517'-6". This fire zone is separated from the adjoining fire zones in the reactor building (Zone 1.1.2.1 - basement floor elevation 476 feet - 6 inches) by both spatial separation and a structural concrete ceiling and floor. The floor and ceiling

have penetrations for stairways, equipment access ways, piping penetrations and electrical penetrations. Fire stops are provided for all electrical penetrations. The combustibile loading in the zone is moderate, approximately 31,400 BTU/FT², and is concentrated in the vicinity of the MCC's.

Portable fire extinguishers and manual hose stations are provided in the area. An early warning detection system is provided for the two MCC's.

125V Distribution Panels 2A and 2B and
125V Distribution Panels 3A and 3B

This equipment is located in fire zone 7.0 - station battery rooms. Both stations battery rooms are enclosed by concrete and concrete block walls which possess a 3-hour fire rating. The floor and ceiling of the rooms are constructed of concrete supported by exposed structural steel. The combustibile loading in the battery rooms consists of battery casings and cable insulation. Portable fire extinguishers and manual hose stations are provided in the vicinity of the battery rooms. Early warning detection systems are provided inside the battery rooms.

4KV SWGR's 33 and 34

The equipment is located in fire zone 8.2.6B - turbine building mezzanine floor, elevation 538'. This fire zone is separate from other fire zones by spatial separation and by a concrete floor and ceiling supported on exposed structural steel. The floor and ceiling have numerous penetrations for stairwells, equipment removal hatches and pipe and electrical penetrations. The pipe and electrical penetrations are sealed. The combustibile loading in the zone is light. Portable fire extinguisher detection and manual hose stations are available in the zone.

4KV SWGR's 33-1 and 34-1

This equipment is located in fire zone 1.1.1.3, reactor building mezzanine floor-elev. 545' - 6". This fire zone is separated from the adjoining fire zones in the reactor building (Zone 1.1.1.2 - ground floor elevation 517 feet - 6 inch and Zone 1.1.1.4 - main floor elevation 570 feet - 0 inch) by both spatial separation and structural concrete floor and ceiling. The floor and ceiling are penetrated by stairways, equipment access ways, piping penetrations, and electrical penetrations. Fire stops are provided on all electrical penetrations. The combustible loading in the location of the 4KV SWGR is light, and consists primarily of cable insulation. Portable fire extinguishers and manual hose stations are provided in the zone. An early warning automatic fire detection system is installed in the vicinity of 4-kV switchgear 33-1 and 34-1.

480V SWGR's 38 and 39 and 250V MCC's 3A and 3B

This equipment is located in fire zone 1.1.1.4 - reactor building main floor, elev 570'. This fire zone is separated from the adjoining fire zones in the reactor building zone 1.1.1.3 - mezzanine floor elevation 545 feet - 6 inches and Zone 1.1.1.5 reactor floor elevation 589 feet - 0 inch) by both spatial separation and a structural concrete floor and ceiling. The floor and ceiling have penetrations for stairways, equipment access ways, piping penetrations, and electrical penetrations. Fire stops are provided for all electrical penetrations. The combustible loading in the zone is light. Portable extinguishers, manual hose stations and a detection system are provided.

480V MCC's 38-7 and 39-7

This equipment is located in fire zone 1.1.1.2 - reactor building ground floor, elev. 517'-6". This fire zone is separated from the adjoining two zones in the reactor building (Zone 1.1.1.1 - basement floor elevation 476 feet - 6 inches and Zone 1.1.1.3 - mezzanine floor elevation 545 feet - 6 inches) by both spatial separation and a structural concrete ceiling and floor. The floor and ceiling have penetrations for stairways, equipment access ways, piping penetrations and electrical penetrations. Fire stops are provided on all electrical penetrations. The combustibile loading in the zone is light. Portable fire extinguishers, manual hose stations, and a detection system are provided.

3.0 Evaluation

All of the fire zones for which exemptions have been requested represent a similar configuration, i.e. combustibile loading is light, there is alternate shutdown capability, smoke detection, and manual fire suppression equipment is available. There is, therefore, reasonable assurance that a fire in any of these areas would be promptly detected and extinguished. The low combustibile loading in these areas ensures that safety related equipment in adjacent areas will not be threatened. The installation of a fixed fire suppression system will not significantly increase the level of fire protection in these areas.

4.0 Conclusion

Based on our evaluation, we find that the existing fire protection in conjunction with alternate shutdown capability in the areas for which an exemption has been requested provides a level of fire protection equivalent to the technical requirements of Section III.G.3 of Appendix R, and therefore, the exemptions should be granted.

5.0 Acknowledgement

The following individual contributed to this evaluation:

R. Eberly

Date: February 2, 1983