

**SAFETY EVALUATION REPORT BY THE
OFFICE OF NUCLEAR SECURITY AND INCIDENT RESPONSE
RELATED TO ZION NUCLEAR POWER STATION, UNITS 1 AND 2
REQUEST FOR
EXEMPTION FROM PORTIONS OF
10 CFR 50.47 AND
10 CFR PART 50 APPENDIX E,
DOCKET NOS. 50-295, 50-304 and 72-1037**

1.0 INTRODUCTION

ZionSolutions, LLC (ZionSolutions) is the holder of Facility Operating License Nos. DPR-39 and DPR-48, which authorize the licensee to possess and store spent nuclear fuel and Greater-than-Class C (GTCC) radioactive waste at the Zion Nuclear Power Station (ZNPS) Unit Nos. 1 and 2. The licenses, pursuant to the Atomic Energy Act of 1954, as amended, and Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR), allow ZionSolutions to possess spent nuclear fuel at the permanently shut-down and defueled ZNPS facility. In a letter dated February 13, 1998 (Reference 1), Commonwealth Edison Company (ComEd), the former licensee, informed the U.S. Nuclear Regulatory Commission (NRC) that ZNPS had permanently ceased power operations. In a letter dated March 9, 1998 (Reference 2), ComEd informed the NRC that ZNPS had removed all fuel from the reactors, moved it to the spent fuel pool (SFP), and certified that the units would remain permanently defueled. In a letter dated May 4, 1998 (Reference 3), the NRC acknowledged that pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 licenses for ZNPS, Units 1 and 2 no longer authorized operation of the reactors, or emplacement or retention of fuel in the reactor vessels. In a letter dated January 25, 2008 (Reference 4), ZNPS's subsequent licensee, Exelon Generation Company, LLC, notified the NRC that the spent nuclear fuel and GTCC would be stored in an Independent Spent Fuel Storage Installation (ISFSI) to be constructed by ZionSolutions and maintained onsite until final disposition. In a letter dated January 12, 2015 (Reference 5), ZionSolutions notified the NRC that as of January 12, 2015, all of the spent fuel at the ZNPS was now stored at the ZNPS ISFSI.

On May 27, 2014, ZionSolutions submitted a letter (Reference 6), requesting exemption from specific emergency planning (EP) requirements of 10 CFR 50.47, "Emergency plans," and Appendix E, "Content of Emergency Plans," to 10 CFR Part 50. ZionSolutions has determined that this exemption request is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security in accordance with 10 CFR 50.12. ZionSolutions' intent in submitting this exemption request is to remove requirements to certain portions of the emergency planning regulations that are no longer applicable since all fuel has been transferred to the ISFSI.

Enclosure 2

2.0 DISCUSSION

ZNPS was shut down on February 21, 1997, and is currently in a permanently shut down and defueled condition. In a letter dated April 13, 1999 (Reference 7), ComEd requested approval of a Defueled Station Emergency Plan (DSEP) and an exemption from certain regulations in 10 CFR 50.47 for ZNPS. On August 31, 1999 (Reference 8), the NRC approved the DSEP for ZNPS and issued an exemption from certain requirements of 10 CFR Part 50 for ZNPS to discontinue offsite emergency planning activities and to reduce the scope of onsite emergency planning. The staff concluded that an exemption was acceptable in view of the greatly reduced offsite radiological consequences associated with the permanently shut-down and defueled status of the facility. The staff found that the postulated dose to the general public from any reasonably conceivable accident would not exceed the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAGs).

In a letter dated May 24, 2004 (Reference 9), Exelon Generation Company, LLC requested approval of additional changes to the ZNPS DSEP. These proposed changes were to allow for a further reduction in the staffing of the defueled emergency response organization (DERO) and to provide more flexibility in the time to augment the control room staff with the DERO. This request was approved in letter dated December 15, 2004 (Reference 10).

On November 23, 2011, the NRC issued a final rule modifying or adding certain EP requirements in Section 50.47, Section 50.54, "Conditions of licenses," and Appendix E to Part 50 (76 *Federal Register* (FR) 72560) (EP Final Rule). The EP Final Rule imposed these new and revised requirements on all Part 50 licensed facilities, including those which had submitted the 10 CFR 50.82 certifications of permanent shutdown and removal of fuel from the reactor. On June 20, 2012 (Reference 13), ZionSolutions submitted a request for exemption from specific emergency planning requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50. ZionSolutions' intent in submitting this exemption request was to maintain its regulatory structure that was in place before the issuance of the EP Final Rule. The requested exemptions were related to offsite emergency planning, emergency support facilities, and emergency planning related to hostile actions. The staff had previously determined as part of the August 31, 1999, exemption that emergency planning requirements in those areas were not necessary in view of the reduced potential for offsite radiological consequences at the ZNPS. On March 30, 2015 (Reference 11), the NRC issued exemptions from certain emergency planning requirements associated with the EP Final Rule to ZionSolutions. The NRC based these exemptions in large part on the findings supporting the August 31, 1999, exemptions, in particular the low likelihood of any credible accident resulting in radiological releases requiring offsite protective measures.

This latest request for exemption from certain EP regulations is based on the further reduction in risk to workers and the public due to transfer of all spent fuel from the SFP to the ISFSI at ZNPS, and to align its granted exemptions consistent with exemptions granted to the other decommissioning power reactor licensees and the requirements of 10 CFR 72.32, "Emergency Plans."

3.0 REGULATORY EVALUATION

In the Final Rule for storage of spent fuel in NRC-approved storage casks at power reactor sites (55 FR 29181; July 18, 1990), the NRC amended its regulations to provide for the storage of spent nuclear fuel under a general license on the site of any nuclear power reactor. In its Statement of Considerations (SOC) for the Final Rule (55 FR 29185), the Commission responded to comments related to emergency preparedness for spent fuel dry storage stating, “The new 10 CFR 72.32(c) ... states that, ‘For an ISFSI that is located on the site of a nuclear power reactor licensed for operation by the Commission, the emergency plan required by 10 CFR 50.47 shall be deemed to satisfy the requirements of this Section.’ One condition of the general license is that the reactor licensee must review the reactor emergency plan and modify it as necessary to cover dry cask storage and related activities. If the emergency plan is in compliance with 10 CFR 50.47, then it is in compliance with the Commission’s regulations with respect to dry cask storage.”

In the SOC for the Final Rule for EP requirements for ISFSIs and Monitored Retrievable Storage (MRS) Installation (60 FR 32430; June 22, 1995), the Commission stated, in part, that “current reactor emergency plans cover all at-or near-reactor ISFSI’s. An ISFSI that is to be licensed for a stand-alone operation will need an emergency plan established in accordance with the requirements in this rulemaking” (60 FR 32431).

The Commission evaluated and responded to comments in its SOC for the Final Rule for emergency planning requirements for ISFSIs and MRS (60 FR 32435), specific to Issues 20 and 48, regarding radiological sabotage, and concluded that, “Emergency planning requirements for power reactors, fuel cycle facilities, ISFSIs and MRSs are all based on a spectrum of accidents, including worst-case severe accidents. Emergency planning focuses on the detection of accidents and the mitigation of their consequences. Emergency planning does not focus on the initiating events. Therefore, based on the potential inventory of radioactive material, potential driving forces for distributing that amount of radioactive material, and the probability of the initiation of these events, the Commission concludes that the offsite consequences of potential accidents at an ISFSI or a MRS would not warrant establishing Emergency Planning Zones.”

In addition, the Commission evaluated and responded to comments in its SOC for the Final Rule for emergency planning requirements for ISFSIs and MRS (60 FR 32435), specific to Issue 49, for an ISFSI not at a reactor site, and concluded that, “The Commission does not agree that as a general matter emergency plans for an ISFSI must include evacuation planning.”

As part of the review for ZionSolutions’ current exemption request, the staff also used the EP regulations in 10 CFR 72.32 and Spent Fuel Project Office Interim Staff Guidance (ISG) – 16, “Emergency Planning” (Reference 12), as references to ensure consistency between specific-licensed and general-licensed ISFSIs.

4.0 TECHNICAL EVALUATION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50, Appendix E,

when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. The staff reviewed this request to determine whether the specific exemptions should be granted.

4.1 Specific Exemptions for 10 CFR 50.47

ZionSolutions' letter dated May 27, 2014 (Reference 6), requested an exemption from 10 CFR 50.47(b), as indicated by the bolded strike-through language below, based on spent fuel being permanently removed from the SFP for the ZNPS facility. The non-bolded strike-through language below reflects exemptions previously granted by the NRC on August 31, 1999 (Reference 8) or on March 30, 2015 (Reference 11).

(4.1.1) 10 CFR 50.47(b)(10)

ZionSolutions' 2014 letter requested:

~~**A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public.** In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.~~

Exemptions granted August 31, 1999 and March 30, 2015:

~~A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.~~

The NRC granted ZS an exemption from this regulation in August 1999 and March 2015. The staff finds the bases for the August 1999 and the March 2015 exemptions remain valid; therefore, ZNPS continues to be exempt from the requirements in 10 CFR 50.47(b)(10).

4.2 Specific Exemptions for 10 CFR Part 50, Appendix E, Section IV

ZionSolutions' letter dated May 27, 2014 (Reference 6), requested an exemption from Appendix E of 10 CFR Part 50, as indicated by the bolded strike-through language below, based on spent fuel being permanently removed from the SFP for the ZNPS facility. The non-

bolded strike-through language below reflects exemptions previously granted by the NRC on August 31, 1999 (Reference 8) or on March 30, 2015 (Reference 11).

(4.2.1) 10 CFR Part 50, Appendix E, Section IV.C.2

ZionSolutions' 2014 letter requested:

~~By June 20, 2012, nuclear power reactor~~ licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition ~~within 15 minutes~~ after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary ~~to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.~~

Exemption granted March 30, 2015:

~~By June 20, 2012, nuclear power reactor~~ licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition ~~within 15 minutes~~ after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded. Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary ~~to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety.~~

The NRC granted ZS its requested exemption in March 2015. The staff finds the basis for that exemption still valid. The ZionSolutions DSEP, as amended by the license amendment approved on May 14, 2015, requires the licensee to notify the Illinois Emergency Management Agency within 30 minutes of declaring an emergency. The NRC concludes that ZionSolutions continues to be exempt from the requirements, "By June 20, 2012," and "within 15 minutes" and "to protect public health and safety provided that any delay in declaration does not deny the State and local authorities the opportunity to implement measures necessary to protect the public health and safety" of 10 CFR Part 50, Appendix E, Section IV.C.2.

(4.2.2) 10 CFR Part 50, Appendix E, Section IV.D.1

ZionSolutions' 2014 letter requested:

Administrative and physical means for notifying local, State, and Federal officials and agencies ~~and agreements reached with these officials and agencies~~ for the prompt notification of the public and for public evacuation or other protective measures, should ~~they become necessary~~ shall be described. This description shall include identification ~~of the appropriate officials, by title and agency,~~ of the State and local government agencies within the EPZs.

Exemption granted August 31, 1999:

Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should ~~they become necessary~~ shall be described. This description shall include identification ~~of the appropriate officials, by title and agency,~~ of the State and local government agencies within the EPZs.

The NRC grants:

Administrative and physical means for notifying local, State, and Federal officials and agencies ~~and agreements reached with these officials and agencies~~ for the prompt notification of the public and for public evacuation or other protective measures, should ~~they become necessary~~ shall be described. This description shall include identification ~~of the appropriate officials, by title and agency,~~ of the State and local government agencies within the EPZs.

The NRC previously granted an exemption to, "of the appropriate officials, by title and agency" in August 1999. The staff finds the basis for that exemption still valid. The staff finds that the lowered risk of a radiological release with all spent fuel transferred to the ZNPS ISFSI and the minimal expected response required by State and local agencies make the requirement for formal agreements no longer necessary. Additionally, consistent with 10 CFR 50.47(b)(3), arrangements for requesting and effectively using assistance resources have been made, and other organizations capable of augmenting the planned response have been identified. Therefore, ZionSolutions is additionally exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.D.1 for, "and agreements reached with these officials and agencies." However, the Zion Solutions emergency plan must still clearly describe the administrative and physical means for event notification purposes in coordination with offsite officials and agencies.

(4.2.3) 10 CFR Part 50, Appendix E, Section IV.E 8.a.(i)

ZionSolutions' 2014 letter requested:

A licensee ~~onsite technical support center~~ and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency;

Exemption granted on August 31, 1999:

A licensee onsite technical support center ~~and an emergency operations~~ facility from which effective direction can be given and effective control can be exercised during an emergency;

The NRC grants:

A licensee ~~onsite technical support center~~ and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency;

On August 31, 1999, ZionSolutions was granted an exemption from the requirement to have a near site emergency operations facility (EOF) in view of the greatly reduced offsite radiological consequences associated with the permanently shut down and defueled status of the reactor. The staff determined that no credible events would result in doses to the public beyond the exclusion area boundary (EAB) that would exceed the EPA PAGs. The staff finds the basis for that exemption still valid.

Because of the reduced size of the on-shift and emergency response organization (ERO) staffing and the limited offsite response required in the event of an emergency given the permanently defueled condition of ZNPS, with all spent fuel now in the ISFSI, separate facilities to accommodate emergency response staffing are no longer required. As such, greater efficiency and coordination is gained by locating staff in a central onsite facility. Communication and coordination with offsite authorities and response organizations, and direction of onsite actions can be performed from any onsite location without the requirements imposed on a technical support center (TSC) or EOF. The licensee has identified the current ISFSI Monitoring Building, to be designated as the Emergency Response Facility (ERF), as the location for staffing the on-shift and augmented ERO.

Based on the above analysis, the staff concludes that ZionSolutions is additionally exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.E 8.a.(i) for a "technical support center."

(4.2.4) 10 CFR Part 50, Appendix E, Section IV.E.9.c.

ZionSolutions' 2014 letter requested:

Provision for communications among the ~~nuclear power reactor control room, the onsite technical support center~~, and the emergency operations facility, and among the

~~nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.~~

Exemption granted on August 31, 1999:

~~Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility, and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.~~

The staff grants:

~~Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility, and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.~~

The staff finds that the basis for exempting the requirements for communications with the emergency operations facility, the principal State and local emergency operations centers, and the field assessment teams are still applicable. Based on the analysis in section 4.2.3 above, the NRC has approved an exemption from the requirement to have an onsite TSC. Additionally, with all spent fuel at ZNPS now in dry cask storage, plant systems and components are no longer required to provide cooling to the SFP, so there is no need for the control room.

An onsite facility for command and control is required by 10 CFR Part 50, Appendix E, Section IV.E.8.a(i). The use of the Control Room as the location for command and control will be eliminated and replaced with the ERF. Emergency conditions will be managed by the Emergency Director at this location. The licensee explains that the ERF provides sufficient space to accommodate on-shift ERO personnel and has redundant communications systems and other necessary equipment, including first aid supplies and controlled copies of appropriate facility documents available. Communications between ZNPS and State and local authorities and the testing requirements are maintained in 10 CFR Part 50, Appendix E, Section IV.E.9.a. Therefore, the staff concludes that ZionSolutions is exempt from the requirements of 10 CFR Part 50, Appendix E, Section IV.E.9.c.

(4.2.5) 10 CFR Part 50, Appendix E, Section IV.E.9.d.

ZionSolutions' 2014 letter requested:

Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the **nuclear power reactor control room**, the onsite technical support center, and the emergency operations facility. Such communications shall be tested monthly.

Exemption granted on August 31, 1999:

Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the ~~nuclear power reactor control room, the onsite technical support center, and the emergency operations facility~~. Such communications shall be tested monthly.

The NRC grants:

Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center ~~from the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility~~. Such communications shall be tested monthly.

The staff finds the basis for the exemption granting deletion of “nuclear power” and “emergency operations facility” in August 1999 still valid. The ERF will serve as the onsite facility for command and control required by 10 CFR Part 50, Appendix E, Section IV.E.8.a(i), per the proposed DSEP. The ERF will be the location from which communication with the NRC will occur.

Based on the analysis in sections 4.2.3 and 4.2.4 above, the staff is exempting *ZionSolutions* from the requirements to have a control room and onsite TSC, the staff concludes that *ZionSolutions* is additionally exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.E 9.d for provisions for communications from the “control room, the onsite technical support center.”

(4.2.6) 10 CFR Part 50, Appendix E, Section IV.F.1.

ZionSolutions’ 2014 letter requested:

The program to provide for: (a) The training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel:

- i. Directors and/or coordinators of the plant emergency organization;
- ii. Personnel responsible for accident assessment, **including control room shift personnel;**
- iii. Radiological monitoring teams;**
- iv. Fire control teams (fire brigades);**
- v. Repair and damage control teams;**
- vi. First aid and rescue teams;**

~~vii. Licensee's headquarters support personnel;~~

viii. Security personnel.

In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services/**Civil Defense**, local law enforcement personnel, ~~local news media persons~~

Exemption granted on August 31, 1999:

~~vii. Licensee's headquarters support personnel;~~

In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services/**Civil Defense**, local law enforcement personnel, ~~local news media persons~~

The NRC grants:

- i. Directors and/or coordinators of the plant emergency organization
- ii. Personnel responsible for accident assessment, including **control room shift personnel**;
- iii. Radiological monitoring teams;
- iv. Fire control teams (fire brigades);
- v. Repair and damage control teams;
- vi. First aid and rescue teams;
- vii. Medical support personnel;
- ~~viii. Licensee's headquarters support personnel;~~
- ix. Security personnel.

In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services/**Civil Defense**, local law enforcement personnel, ~~local news media persons~~.

Based on the permanently shut down and defueled condition of ZNPS, with all spent fuel now in the ISFSI, the on-shift ERO is composed of the ISFSI Shift Supervisor, acting as the Emergency Director, and for emergencies involving radiological consequences, the on-shift Radiation Protection Technician, and any employees or contract personnel on site that the Emergency Director dictates. The augmented ERO comprises personnel with the expertise for handling a given emergency as determined by the Emergency Director. Training for the on-shift ERO positions is maintained by 10 CFR Part 50, Appendix E, Section IV.F.1.i. and ii. Although

“teams” for radiological monitoring, fire control (fire brigades), repair and damage control, first aid and rescue may not be required, the staff concludes that training on these functions, as they relate to the DSEP, is necessary to promote maintenance of the emergency response organization’s skills. Additionally the DSEP states that after the On-Shift Radiation Protection Technologist is transitioned to an on-call augmented position, the security staff will perform the initial radiological assessments. In the proposed DSEP, ZionSolutions commits to providing initial and continuing training for each person charged with DERO responsibilities, with continuing training being conducted each calendar year. A part of the continuing training addresses changes to DERO responsibilities that are not considered part of their routine duties.

The Office of Civil Defense as a distinct entity no longer exists in the United States. The basis for exempting the licensee from the requirement to train licensee headquarters support personnel and local news media is still valid and ZionSolutions is still exempt from those requirements. Associated with the elimination of all facility control functions in the Control Room, the use of the Control Room as the location for command and control will be eliminated and replaced with the ERF. Based on this analysis, the staff finds ZionSolutions is exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1 for “including control room shift personnel” and “/Civil Defense.”

(4.2.7) 10 CFR Part 50, Appendix E, Section IV.F.2. a

ZionSolutions’ 2014 letter requested:

~~A full participation⁴ exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located.~~ Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a

Exemption granted on March 30, 2015:

~~A full participation⁴ exercise which tests as much of the licensee, State, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located. Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a.~~

The NRC granted an exemption from this requirement in March 2015. The staff finds the bases for the March 2015 exemptions remain valid, therefore ZionSolutions continues to be exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.a. The March 2015 exemption also encompassed subsections IV.F.2.a.(i), IV.F.2.a.(ii), and IV.F.2.a.(iii). Continuity of the exemption from the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.a. includes all the subsections.

(4.2.8) 10 CFR Part 50, Appendix E, Section IV.F.2.b

ZionSolutions' 2014 letter requested:

Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. ~~Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, and assessment of the onsite and ~~offsite~~ impact of radiological releases, **protective action recommendation development, protective action decision making, plant** system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF)) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.

Exemptions granted on August 31, 1999 and March 30, 2015:

Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. ~~Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, and assessment of the onsite and ~~offsite~~ impact of radiological releases, protective action recommendation development, protective action decision making, plant system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF)) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the

opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.

The NRC grants:

Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years. ~~Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b. The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.~~ In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, and assessment of the onsite and offsite impact of radiological releases, ~~protective action recommendation development, protective action decision making, plant~~ system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities (Technical Support Center (TSC), Operations Support Center (OSC), and the Emergency Operations Facility (EOF)) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.

The bases for the exemptions approved in August 1999 and in March 2015 remain valid. In the permanently shut down and defueled condition of the ZNPS and all of the spent fuel transferred to the ZNPS ISFSI, the staff finds that pre-determined protective action recommendations from the licensee are no longer required to provide protection for the health and safety of the workers and the public. Protective actions for the public deemed appropriate by offsite authorities would be implemented under their comprehensive emergency management (all hazards) approach.

With all spent fuel at ZNPS now in dry cask storage, plant systems and components are no longer required to provide cooling to the SFP, so there is no need for "plant" system repair. System repair and mitigative action implementation will be limited to covering and/or shielding of a damaged fuel cask and restoring controlled access.

Based on this analysis, the staff concludes that Zion *Solutions* is additionally exempt from the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.b for "protective action recommendation development, protective action decision making, plant."

5.0 CONCLUSION

The NRC concludes that the licensee's request for an exemption from certain requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50 as specified in this safety evaluation, are

acceptable in view of the greatly reduced offsite radiological consequences associated with the current plant status, as permanently shut down and spent nuclear fuel is stored in an ISFSI.

The request for the exemption has been reviewed against the acceptance criteria included in 10 CFR 50.47, Appendix E to 10 CFR Part 50, 10 CFR 72.32 and Interim Staff Guidance – 16. The review considered the permanently shut down and defueled status of the reactor, and the postulated dose to the general public from any reasonably conceivable accident would not exceed EPA PAGs. These evaluations were supported by the previously documented licensee and staff accident analyses for the emergency plan change approval and exemption issued on August 31, 1999. The staff concludes that the ZNPS DSEP provides: (1) an adequate basis for an acceptable state of emergency preparedness, and (2) in conjunction with arrangements made with offsite response agencies, reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the ZNPS.

6.0 REFERENCES

1. Letter from Commonwealth Edison Company to U.S. Nuclear Regulatory Commission, "Zion Nuclear Power Station, Unit Nos. 1 and 2 Certification of Permanent Cessation of Operations," dated February 13, 1998 (ADAMS Legacy No. 9802200407).
2. Letter from Commonwealth Edison Company to U.S. Nuclear Regulatory Commission, "Zion Nuclear Power Station, Unit Nos. 1 and 2 Certification of Permanent Fuel Removal," dated March 9, 1998 (ADAMS Legacy No. 9803110251).
3. Letter from U.S. Nuclear Regulatory Commission to Oliver Kingsley, Commonwealth Edison Company, "Certification of Permanent Cessation of Power Operation and Permanent Removal of Fuel from the Reactor for Zion Nuclear Power Station, Units 1 and 2, dated May 4 1998, (ADAMS Legacy No. 99805080144).
4. Letter from Exelon Generation Company, LLC to U.S. Nuclear Regulatory Commission, "Application for License Transfers and Conforming Administrative License Amendments," dated January 25, 2008 (ADAMS Accession No. ML080310521).
5. Letter from ZionSolutions, LLC to U.S. Nuclear Regulatory Commission, "Request to Rescind NRC Orders," dated January 12, 2015 (ADAMS Accession No. ML15014A062).
6. Letter from ZionSolutions, LLC to U.S. Nuclear Regulatory Commission, "Zion, Units 1 and 2 – License Amendment Request for Proposed Revision of Defueled Station Emergency Plan and Request for Exemption from Certain Requirements of 10 CFR 50.47, and 10 CFR 50, Appendix E," dated May 27, 2014 (ADAMS Accession No. ML14148A295).
7. Letter from Commonwealth Edison Company to U.S. Nuclear Regulatory Commission, "Request for Approval of Defuel Station Emergency Plan and Exemption from Certain Sections of 10 CFR 50.47, 'Emergency Plans,' for the Zion Nuclear Power Station," dated April 13, 1999 (ADAMS Legacy No. 9904220148).

8. Letter from U.S. Nuclear Regulatory Commission to Commonwealth Edison Company, "Request for Approval of Defueled Station Emergency Plan and Exemption from Certain Requirements of 10 CFR 50.47, 'Emergency Plans' – Zion Nuclear Power Station, Unit Nos. 1 and 2 (TAC Nos. MA5253 and MA5254)," dated August 31, 1999 (ADAMS Legacy No. 9909070087)
9. Letter from Zion Nuclear Power Station to U.S. Nuclear Regulatory Commission, "Request for NRC Approval of Changes to the Emergency Plan," dated May 24, 2004, (ADAMS Accession No. ML041540436).
10. Letter from U.S. Nuclear Regulatory Commission to Zion Nuclear Power Station, "Zion Nuclear Power Station Units 1 and 2 - Defueled Station Emergency Plan Changes for the Plant (TACs L52632 and L52633)," dated December 15, 2004, (ADAMS Accession No. ML043310235).
11. Letter from U.S. Nuclear Regulatory Commission to J.Sauger, Zion Power Station, Units 1 and 2, "Request for Exemption from Certain Requirements of the Final Rule for Enhancements to Emergency Preparedness" dated March 30, 2015 (ADAMS Accession No. ML14272A226).
12. Spent Fuel Project Office Interim Staff Guidance – 16, "Emergency Planning," dated June 14, 2000 (ADAMS Accession No. ML003724570).
13. Letter from ZionSolutions, LLC to U.S. Nuclear Regulatory Commission, "Request for Exemption to Revised Emergency Planning Rule," dated June 20, 2012, (ADAMS Accession No. ML12173A316).

Principal Contributors: Michael Norris
Michael Wasem