



**Entergy Nuclear Northeast  
Entergy Nuclear Operations, Inc.**

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**Brian R. Sullivan**  
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JAFP-16-0096  
June 16, 2016

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

**Subject:** Supporting Information for Request for Relaxation of March 12, 2012  
Commission Orders Modifying Licenses with Regard to Requirements for  
Mitigation Strategies for Beyond Design Basis External Events and Reliable  
Spent Fuel Pool Instrumentation (Order Number EA-12-049 and EA-12-051)

James A. FitzPatrick Nuclear Power Plant  
Docket No. 50-333  
License No. DPR-059

**Reference:** ENOI to NRC, Request for Relaxation of March 12, 2012 Commission Orders  
Modifying Licenses with Regard to Requirements for Mitigation Strategies for  
Beyond Design Basis External Events and Reliable Spent Fuel Pool  
Instrumentation (Order Number EA-12-049 and EA-12-051), JAFP-16-0061,  
dated April 14, 2016

Dear Sir or Madam:

On April 14, 2016, Entergy Nuclear Operations, Inc. (ENOI) submitted a request for relaxation for James A. FitzPatrick Nuclear Power Plant (JAF) for deferral of the implementation date for compliance with Orders EA-12-049 and EA-12-051 from December 31, 2016 to June 30, 2017.

Based on discussions with the NRC, the Attachment to this letter contains supporting information for the referenced request for relaxation.

This letter contains no new regulatory commitments. If you have any questions regarding this request, please contact William C. Drews, Regulatory Assurance Manager, at 315-349-6562.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 16<sup>th</sup> day of June, 2016.

Sincerely,

*for. [Handwritten Signature]*

Brian R. Sullivan  
Site Vice President

BRS/WCD/mh

Attachment: Supporting Information for Relaxation Request

cc: Director, Office of Nuclear Reactor Regulation  
NRC Region I Administrator  
NRC Resident Inspector  
NRC Project Manager  
NYSPSC  
NYSERDA

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**Attachment**

**Supporting Information for Relaxation Request**

**(4 Pages)**

## Supporting Information for Relaxation Request

### Order EA-12-049

Current regulatory requirements and existing plant capabilities are sufficient to allow continued operation which does not pose an imminent threat to public health and safety. However, the events at Fukushima Dai-ichi led the NRC to conclude that additional requirements must be imposed on Licensees to increase the capability of nuclear power plants to mitigate beyond-design-basis external events (BDBEE).

Order EA-12-049 and guidance in NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, plan for simultaneous occurrence of two events: Extended Loss of AC Power (ELAP) and Loss of Normal Access to Ultimate Heat Sink (LUHS). This means that AC power provided by off-site sources and Emergency Diesel Generators are assumed to be unavailable.

New strategies to meet NEI 12-06 were being developed to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling with:

1. currently installed equipment and resources
2. portable, onsite equipment and consumables
3. offsite resources

These new strategies may not be implemented but James A. FitzPatrick Nuclear Power Plant (JAF) has a number of beyond design basis strategies currently available.

### Immediate Event Response

Initial actions by Operators, based on EOP-2, include restoring reactor water level with the high pressure steam-driven Reactor Core Isolation Cooling (RCIC) and/or High Pressure Coolant Injection (HPCI) system with water supplied from the Condensate Storage Tanks (CST). Steam from the reactor pressure vessel (RPV) will be vented through the main steam Safety Relief Valves (SRVs) to the suppression pool in order to remove decay heat and to begin to depressurize the RPV. Both RCIC/HPCI and SRVs are controlled by DC power supplied by station batteries so they can be operated without AC power. JAF's coping time for a loss of AC power is 4 hours per the station blackout procedure AOP-49.

Due to the loss of AC power, the normal Fuel Pool Cooling, fuel pool cooling assist mode of Residual Heat Removal (RHR), and Decay Heat Removal (DHR) systems are not available; so, the SFP will begin to heat up. With all the fuel removed from the RPV to the SFP and without a SFP cooling system, the approximate heat up rate would be 100 degrees Fahrenheit in 18 hours per AOP-68.

### Short Term Response

A flow path can be established from installed diesel-driven fire pump 76P-1 or 76P-4 to provide a make-up flow from the intake bay into the RPV. Because the fire pumps are low pressure pumps, the RPV will be depressurized using manual control of SRVs prior to establishing this method of core cooling. A pre-staged hose can be used to connect the fire protection system to the RHR system via the RHR Service Water (RHRSW) system. Valves can be aligned manually and the firewater system can supply cooling water to the reactor vessel, per OP-13A.

SFP make-up water can be supplied in a similar manner, using firewater through the RHR system, per AOP-68.

## Supporting Information for Relaxation Request

### 10 CFR 50.54(hh) (B.5.b Strategies):

B.5.b refers to a section of NRC Order EA-02-026; an order with similar precepts as EA-12-049. This Order was retracted when it became part of the Code of Federal Regulation as 10 CFR 50.54(hh) and of the JAF Facility Operating License as Condition 2.R. The strategies and equipment established by B.5.b and maintained by regulation perform a similar function as the requirements of NRC Order EA-12-049. The B.5.b strategy established in plant procedure TSG-12, "B.5.b Extreme Damage Scenario Mitigating Strategies," and TSG-8, "Extending Site Black-Out Coping Time, Starting an EDG Injecting to Vessel with no DC Power Available," provides flexible response to extreme accident scenarios, such as:

- Depressurize the RPV using the HPCI and RCIC steam drain lines or steam test connection,
- Start and run RCIC in pressure control mode without control room or DC power,
- Bleed off RPV coolant through the Reactor Water Clean-up (RWCU) System to the condenser hotwell,
- Recharge station DC battery using mobile diesel generator and transformer,
- Fire water can be connected directly from the fire water header to the SFP with hoses placed over the side of the SFP.
- Fire truck - Procedures and training on the use of this equipment support a number of mitigating strategies:
  - Provide water to CST
  - Make-up to hotwell
  - Provide water to spent fuel pool
  - Depressurize and inject water to the Reactor Vessel
  - Flood containment
  - Provide water spray to precipitate airborne release

### Long Term Response

JAF has access to additional equipment that is on site or can be provided through agreements with other parties that would enhance and improve the current strategies. For example:

1. Institute of Nuclear Power Operations (INPO) has established an Industry Response Center (IRC) for sharing of equipment between Nuclear Power Plants during a BDBEE.
2. The Entergy Nuclear Operations, Inc. (ENOI) Fleet remains available to share equipment to support any event.
3. In 2012, shortly after the events of Fukushima, ENOI followed the advice of the Nuclear Strategic Issues Advisory Committee (NSIAC) and purchased equipment that is currently stored at JAF. This includes a diesel driven pump, cables and hoses, portable generators, ventilation fans, fuel transfer pumps, portable lighting, radio equipment and satellite phones, and batteries.

### Emergency Plan and Training

The expectation is for Emergency Response Organization (ERO) personnel to respond to their assigned emergency response facilities when made aware of an area-wide loss-of-grid that results in degraded communications capability. This expectation is included in the ERO annual requalification training program and it was communicated via an internal Entergy newsletter.

In addition to existing emergency response radios and B.5.b-dedicated radios, ten (10) additional portable digital radios have been purchased, received, and deployed to be used for communications with onsite response teams or offsite field monitoring teams. In addition to the

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one (1) existing satellite phone currently on site at JAF, eleven (11) additional battery-operated satellite phones have been purchased, received, and deployed for emergency response personnel for onsite and offsite communications.

#### **Conclusion**

On March 16, 2016, ENOI submitted its certification of permanent cessation of power operations pursuant to 10 CFR 50.82(a)(1)(i) and 10 CFR 50.4(b)(8) for JAF. It specified a shutdown date of January 27, 2017. The request for relaxation of the EA-12-049 schedule from December 31, 2016 to June 30, 2017, is minor in that JAF will only operate at power for 27 days of the requested 180 day extension. After ceasing plant operations the fuel will be removed from the reactor vessel within a few weeks.

Any potential risks related to the granting of the relaxation request made by JAFP-16-0061 on April 14, 2016, are low given the short duration of continued operation beyond the original implementation deadline, ENOI's plans to permanently defuel the reactor shortly after cessation of operations, the availability of alternative SFP cooling strategies, continued compliance with all other applicable NRC requirements, and the availability of shared resources provide a reasonable assurance of safety.

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### Order EA-12-051

The Spent Fuel Pool (SFP) relies on maintenance of an adequate inventory of water under accident conditions to provide containment, as well as the cooling and shielding safety functions. If the failure of the forced cooling system starts to affect SFP level then makeup water is needed. During the events in Fukushima, responders were without reliable instrumentation to determine water level in the SFP. This caused concerns that the pool may have boiled dry, resulting in fuel damage. Fukushima demonstrated the confusion and misapplication of resources that can result from beyond-design-basis external events (BDBEE) when adequate instrumentation is not available.

JAF's current SFP level instrumentation is designed to monitor normal and abnormal conditions based on setpoints instead of a continuous monitor. A measurement scale is located on the wall of the SFP but it has to be viewed visually or by an installed camera and a control room alarm activates if the SFP level exceeds a specified range. A BDBEE could make it difficult to take active measurements of the SFP. The intent of EA-12-051 and the guidance for complying with this order, NEI 12-02, is to have an additional and more reliable means of measuring SFP water level.

In 2011, JAF responded to a level 1 INPO Event Report IER L1-11-2, Fukushima Daiichi Nuclear Station Spent Fuel Pool Loss of Cooling and Makeup. An alternative level and temperature monitoring method was established by storing portable level and temperature instruments. Procedure AOP-68 instructs how to install these portable instruments as an alternative means of measuring SFP water level.

### Conclusion

On March 16, 2016, ENOI submitted its certification of permanent cessation of power operations pursuant to 10 CFR 50.82(a)(1)(i) and 10 CFR 50.4(b)(8) for JAF. It specified a shutdown date of January 27, 2017. The request for relaxation of the EA-12-049 schedule from December 31, 2016 to June 30, 2017, is minor in that JAF will only operate at power for 27 days of the requested 180 day extension. After ceasing plant operations the fuel will be moved out of the reactor vessel within a few weeks. Following defueling of the reactor pressure vessel the spent fuel pool will be the only focus for mitigating strategies during a BDBEE.

Any potential risks related to the granting of the relaxation request made by JAFP-16-0061 on April 14, 2016, are low given the short duration of continued operation beyond the original implementation deadline, current SFP level instrumentation, and the availability of backup SFP level and temperature monitoring equipment.