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March 30, 2006
JAFP-06-0057

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
1555 Rockville Pike
Rockville, Maryland 20852

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Response to Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power

References: 1. NRC Generic Letter 2006-02, *Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power*, dated February 1, 2006

Dear Sir or Madam:

The NRC issued Generic Letter 2006-02 (Reference 1) to request information for determining compliance with regulatory requirements governing electric power sources. Specifically, the NRC is requesting information regarding (1) use of protocols between the nuclear power plant (NPP) and the transmission system operator (TSO), independent system operator (ISO), or reliability coordinator/authority (RC/RA) including transmission load flow analysis tools (analysis tools) by TSOs to assist NPPs in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specification (TS); (2) use of NPP/TSO protocols and analysis tools by TSOs to assist NPPs in monitoring grid conditions for consideration in maintenance risk assessments; (3) offsite power restoration procedures in accordance with Section 2 of NRC Regulatory Guide (RG) 1.155, "Station Blackout;" and, (4) losses of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site-years in accordance with RG 1.155. The requested information is being provided under the requirements of 10 CFR 50.54(f).

Attachment 1 to this letter provides the James A. FitzPatrick Nuclear Power Plant (JAFNPP) response to Generic Letter 2006-02. Generic Letter 2006-02 discusses compliance with General Design Criterion (GDC) 17 in several locations. The exact extent of compliance of JAFNPP to the GDC is described in JAFNPP's Updated Final Safety Analysis Report.

Some of the questions in Generic Letter 2006-02 seek information, procedures and activities concerning grid reliability for which JAFNPP does not have first-hand knowledge. JAFNPP has not independently verified all information provided by:

- *New York Independent System Operator*
- *National Grid USA*
- *New York Power Authority*

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There are no commitments contained in this letter. If you should have any questions, please contact Jim Costedio, Regulatory Compliance Manager, at (315) 349-6358. I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 30, 2006.

Very truly yours,

T.A. Sullivan

TS:RP:dmr

Attachment: As stated

cc:

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Attachment 1

James A. FitzPatrick Nuclear Power Plant

Response to NRC Generic Letter 2006-002

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

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1.Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA to assist the NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specifications.	
1(a) Do you have a formal agreement or protocol with your TSO?	Yes. Formal communications protocols have been established between JAFNPP and the New York Independent System Operator (NYISO) and the Transmission Owners (TO). JAFNPP has a number of formal agreements with the NYISO and TOs as follows: • Interconnection Agreement with the New York Power Authority (NYPA) for the 345kV power transmission system • New York State Transmission Tariffs with NYISO • NYISO Customer & Guest Application Form of Service Agreement for NYISO Market Administration and Control Area Service Tariff • Operating Coordination Agreement with National Grid (NG) (previously known as Niagara Mohawk Power Corporation), and NYPA • Electric Service Agreement with National Grid for the 115kV offsite power transmission system • Agreement for Contingency Alarm Services with National Grid for the 115kV offsite power transmission system In the New York Reliability Coordinator Area, the NYISO has operational authority over the bulk power system. The TOs have operational authority over the non-bulk power system. The NYISO and TSOs operate the New York electric transmission system in accordance with the North American Electric Reliability Council (NERC), Northeast Power Coordinating Council (NPCC) and New York State Reliability Council (NYSRC) criteria. Established communications protocols exist between the NYISO and the TOs. Communications to the generating resources are through the TOs, which perform the TSO function. The associated TSOs monitor the localized grid conditions and coordinate issues such as off site power operability with JAFNPP.
1(b) Describe any grid conditions that would trigger a notification from the TSO to the NPP licensee and if there is a time period required for the notification.	The TSOs (NG and NYPA) are required to notify JAFNPP whenever an impairment or potentially degraded grid condition is recognized by the TSOs. The TSOs have the following information in their notification procedures: • National Grid should notify the JAFNPP immediately if emergency events or conditions threaten 115 kV or 345 kV grid stability or reliability. JAFNPP requests notification to reduce

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	the risk of a unit trip. Notification should also be made when conditions no longer exist • National Grid should notify the JAFNPP approximately 15 minutes prior to de-energizing, switching, or beginning in-service work on 115kV transmission lines associated with JAFNPP • NYPA should notify the JAFNPP prior to de-energizing, switching, or beginning in-service work on 345kV transmission lines associated with JAFNPP • National Grid should notify the JAFNPP of potentially damaging inclement weather or solar magnetic disturbances that may impact the security of the Oswego complex (i.e., transmission system in the area of JAFNPP). Notification times are specified within NG procedures. However, good utility practice would require a prompt notification, commensurate with the duty burden of the system security operator during the time of the event. • NYPA should notify the JAFNPP of ordered power reductions in generation for system security. • Notifications for post-LOCA contingency low voltage alarm should be performed in accordance with NG procedures. Notification time is made following a verification of the alarm, via a second contingency load flow analysis, generated by the Energy Management System (EMS) computer system. These notification guidelines are specified in National Grid and NYPA procedures.
1(c) Describe any grid conditions that would cause the NPP licensee to contact the TSO. Describe the procedures associated with such a communication. If you do not have procedures, describe how you assess grid conditions that may cause the NPP licensee to contact the TSO.	JAFNPP has procedures that require notification and communication with the ISO and/or TSOs for changes in the following grid conditions: • Plant start-up, plant shutdown and plant power changes • Every shift, prior to turnover, JAF contacts the TSO to verify status of the 115kV and 345kV transmission lines • Modifications resulting in changes to generator electrical characteristics, post-trip off-site voltage criteria, or changes in JAFNPP post trip station or accident loading • If 115kV line voltage is outside the 116kV to 122kV normal operating range • If 345kV line voltage is outside the 345kV to 368kV normal operating range • Method of voltage control, (i.e., automatic or manual) • Planned maintenance activities such as switchyard work, Emergency Diesel Generator (EDG) maintenance or relay testing associated with the offsite power sources

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	• Emergent work associated with the offsite power systems • Changes to Switchyard Voltage, Switchyard Breaker alignment, Generator VAR loading • Entry into an unplanned LCO associated with 115kV offsite power • Every 8 hours if an off-site circuit is inoperable • Every 8 hours if an EDG subsystem is inoperable • Any plant condition that may threaten continued plant operation or possible plant power change • Any grid digital transient recorder alarm not due to station relaying on either the 115kV or 345kV system • Severe weather conditions, unit trips, unusual grid loading and equipment failures that may affect grid stability • Degraded breaker air pressure or high SF6 gas differential pressure for breaker • Loss of 13.2 kV supply to the site • Loss of offsite power or loss of offsite power is imminent
1(d) Describe how NPP operators are trained and tested on the use of the procedures or assessing grid conditions in question 1(c).	Licensed operators are provided training (classroom and simulator) and are tested on grid conditions. Training topics include but are not limited to: • Electrical distribution systems • Operating Procedures for 115kV and 345kV systems • Notification of the ISO and/or TSO of changing conditions • Abnormal Operating Procedures (which includes loss of offsite power and major grid disturbances) • Selected Significant Operating Event Report recommendations, which include SOER 99-01, Loss of Grid • Emergency conditions Examination criterion for each of the above topics is specified in the applicable program lesson plan.
1(e) If you do not have a formal agreement or protocol with your TSO, describe why you believe you continue to comply with the provisions of	Not applicable. Formal agreements exist.

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GDC 17 as stated above, or describe what actions you intend to take to assure compliance with GDC 17.	
1(f) If you have an existing formal interconnection agreement or protocol that ensures adequate communication and coordination between the NPP licensee and the TSO, describe whether this agreement or protocol requires that you be promptly notified when the conditions of the surrounding grid could result in degraded voltage (i.e., below TS nominal trip setpoint value requirements; including NPP licensees using allowable value in its TSs). or LOOP after a trip of the reactor unit(s).	As previously stated, JAFNPP does have a formal agreement with the TSO that addresses communication and coordination between JAFNPP and the TSO. Notifications for post-LOCA contingency low voltage alarm are performed in accordance with TSO procedures. Notification is made following a verification of the alarm. The verification is determined via contingency load flow analyses that are generated by the TSO using the EMS computer system.
1(g) Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection.	JAFNPP switchyard voltage was analyzed for worst case reserve station service transformer loading conditions, which is the unit trip with LOCA scenario. The minimum required 115 kV switchyard voltage is based on maintaining emergency bus voltage above the reset point of the second level voltage protection relays (degraded voltage relay reset is approximately 3920 VAC) during the unit trip with LOCA scenario. This requires switchyard voltage to remain at or above 112.0 kV. If switchyard voltage falls below this level, and 4 kV emergency bus voltage reaches the degraded voltage relay dropout setpoint of 3871 ± 28V for a maximum of 9.5 seconds with LOCA or a

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	maximum of 46.6 seconds without LOCA , the emergency switchgear is transferred to the on-site EDGs. As the JAFNPP unit trip with LOCA provides the greatest reserve station service transformer loading, the minimum acceptable switchyard voltage is based on this analyzed scenario.

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2. Use of criteria and methodologies to assess whether the offsite power system will become inoperable as a result of a trip of your NPP.	
2(a) Does your NPP's TSO use any analysis tools, an online analytical transmission system studies program, or other equivalent predictive methods to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? If available to you, please provide a brief description of the analysis tool that is used by the TSO.	Yes. National Grid (TSO) maintains an Energy Management System (EMS) and associated security model. The EMS is a system of computer-aided tools used by system operators to monitor and control the performance of the transmission system. The TSO also maintains a security model that includes a State Estimator (SE) and a Contingency Evaluation Program (CEP). The CEP solves pre-defined contingencies on the electric system, including a trip of JAFNPP and transfer of station and LOCA loading to the offsite power system. If the JAFNPP 115kV system post-trip low voltage contingency limit is exceeded, an alarm is generated and the JAFNPP control room is notified. The program creates a real-time network model starting with bus/branch connectivity, branch impedances and ratings, and steady state generator models. The program then superimposes real-time switch and breaker status to determine network topology. Real-time generation and bus loads are applied to this model.
2(b) Does your NPP's TSO use an analysis tool as the basis for notifying the NPP licensee when such a condition is identified? If not, how does the TSO determine if conditions on the grid warrant NPP licensee notification?	Yes. The TSO notifies the JAFNPP control room operator of a post-trip low voltage contingency alarm determined by the TSO's CEP computer system. The notifications from the TSO are made in accordance with National Grid procedures.
2(c) If your TSO uses an analysis tool, would the analysis tool identify a condition in which a trip of the NPP would result in switchyard voltages (immediate and/or long-	Yes. The CEP solves the pre-defined contingency of a trip of JAFNPP and transfer of station and LOCA loading to the offsite power system. The limiting switchyard voltage that would result in actuation of plant degraded voltage protection triggers an alarm to provide indication to the TSO.

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term) falling below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and consequent actuation of plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.	
2(d) If your TSO uses an analysis tool, how frequently does the analysis tool program update?	At present, the analysis tool program updates between 5 minutes and 25 minutes depending on load and network changes.
2(e) Provide details of analysis tool-identified contingency conditions that would trigger an NPP licensee notification from the TSO.	The CEP would trigger a notification to the JAFNPP control room for a low voltage alarm associated with the pre-defined contingency of a trip of JAFNPP and transfer of station and LOCA loading to the offsite power system.
2(f) If an interface agreement exists between the TSO and the NPP licensee, does it require that the NPP licensee be notified of periods when the TSO is unable to determine if offsite power voltage and capacity could be inadequate? If so, how does the NPP	Yes. The agreement does specifically require JAFNPP notification of planned and unplanned EMS outages. During this period, the Low Voltage Contingency Alarm will be out of service. Loss of the voltage prediction tool alone has no impact on operability. If notified by the TSO that the Low Voltage Contingency Alarm is inoperable, then JAFNPP procedures direct plant operators to perform the following: • Contact the TSO once per shift to verify that imminent/expected degraded voltage conditions do not exist • If the TSO indicates imminent/expected degraded voltage conditions exist then an operability

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licensee determine that the offsite power would remain operable when such a notification is received?	determination is performed and hourly contact with the TSO is established • Minimize large electrical load changes • Return inoperable EDGs and ECCS to operable status as soon as possible • Minimize maintenance and testing of the electrical distribution system • Terminate maintenance or testing on critical components of the electrical distribution system as soon as possible
2(g) After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the analysis tool?	No. There is no formal process for comparing the actual post-trip voltages to the post-trip contingency voltage results calculated by the CEP program. However, analyses have been performed on a case by case basis by the TSO to validate EMS predicted results.
2(h) If an analysis tool is not available to the NPP licensee's TSO, do you know if there are any plans for the TSO to obtain one? If so, when?	Not applicable. The TSO has an analysis tool.
2(i) If an analysis tool is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected timeframe of the	Not applicable. The TSO has an analysis tool.

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study? (a) Are the key assumptions and parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses?	Not applicable.
(b) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?	Not applicable.
2(j) If your TSO does not use, or you do not have access to the results of an analysis tool, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.	Not applicable. The TSO uses an analysis tool and the applicable contingency voltage results are made available to JAFNPP.

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3. Use of criteria and methodologies to assess whether the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	
3(a) If the TSO notifies the NPP operator that • a trip of the NPP, or • the loss of the most critical transmission line or • the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?	Yes. If the event described actually occurs and there is an actual degradation or loss of an applicable offsite power source then under those circumstances JAFNPP offsite power sources would be declared inoperable. In addition, site procedures contain guidance for operators to declare offsite power systems inoperable and enter Technical Specification actions when notified by the TSO of post-LOCA contingency voltage < 112.0 kV (i.e., contingent trip of JAFNPP with LOCA) determined by the TSO's EMS computer system. The notifications from the TSO are made in accordance with TSO procedures. Other postulated contingencies on the transmission grid (e.g., loss of the most critical transmission line or the largest supply to the grid) are not used as a basis for functional determinations of offsite power.
3(b) If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when	Not applicable. Double sequencing is not part of the JAFNPP licensing basis and JAFNPP is not designed or analyzed for double sequencing scenarios. As described in the response to Question 2, offsite sources are monitored to ensure that sufficient

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subjected to a double sequencing (LOCA with delayed LOOP event) as a result of the anticipated system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not?	voltage will be available to minimize the potential for separation from offsite power during LOCA sequencing. If it is determined that post-contingency voltage will not be sufficient for this case, offsite power is declared inoperable. Abnormal operating procedures contain compensatory actions to be implemented by JAFNPP under this condition.
3(c) Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3(b).	As noted above, the scenario of a LOCA with delayed LOOP resulting in a double sequencing event is not part of the JAFNPP licensing basis. However, in the unlikely event a LOCA should occur when switchyard voltage is inadequate, the degraded voltage relays would separate the offsite source from the safety related electrical buses as designed. In the event of a postulated LOCA with delayed LOOP, the degraded voltage relays would sense the LOOP condition whenever it occurred and initiate separation from the offsite source. The EDGs would start, loads would be shed from the busses, and safety related loads re-sequenced back on the bus. EDGs and safety related motors would continue to be capable of performing their safety functions during this condition.
3(d) If the NPP licensee is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.	No. Technical Specification action statements are not entered based on identification of grid conditions that potentially impair offsite power. As described in the response to question 3(a), applicable TS action statements are only entered under actual grid conditions in which a contingent unit trip with LOCA would result in insufficient offsite voltage.
3(e) If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment inoperable in any of these circumstances,	Not applicable. As described in response to question 3(a), JAFNPP procedures require plant operators to enter applicable Technical Specification action statements under actual grid conditions in which a contingent unit trip with LOCA, would result in insufficient post-trip voltage.

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explain why you believe you comply with the provisions of GDC 17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	
3(f) Describe if and how NPP operators are trained and tested on the compensatory actions mentioned in your answers to questions 3(a) through (e).	Operator prescribed training topics include procedures governing compensatory actions in response to notifications from the TSO regarding grid conditions that impair offsite power. This includes loss of offsite power and major grid disturbances. The method and standard of evaluation for each training topic is specified in the applicable lesson plan. JAFNPP operators are trained and tested on applicable plant procedures as part of operator initial and requalification training programs.

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4. Use of criteria and methodologies to assess whether the offsite power system will remain operable following a trip of your NPP.	
4(a) Do the NPP operators have any guidance or procedures in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations in which the condition of plant-controlled or -monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system? If so, describe how the operators are trained and tested on the guidance and procedures.	Yes. JAFNPP operating procedures provide guidance on the impact of plant equipment due to degraded voltage conditions and the required operator actions. Plant procedures also address control and monitoring of the main generator output and voltage regulator to support plant and grid conditions. JAFNPP does not have auto tap changing transformers, capacitors, and static VAR compensators. Furthermore, Technical Specification Bases and the UFSAR provide relevant information and the operators are trained (classroom and simulator) and tested on applicable procedures as part of their initial and requalification training programs. The method and standard of evaluation for each training topic is specified in the applicable lesson plan.
4(b) If your TS bases sections, the final safety analysis report, and plant procedures do not provide guidance regarding situations in which the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite	Not applicable. Procedures are in use as noted in item 4(a).

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power system, explain why you believe you comply with the provisions of GDC 17 and the plant TSs, or describe what actions you intend to take to provide such guidance or procedures.	

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Use of NPP licensee/TSO protocols and analysis tool by TSOs to assist NPP licensees in monitoring grid conditions for consideration in maintenance risk assessments The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing them.	
5. Performance of grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).	
5(a) Is a quantitative or qualitative grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out-of-service?	Yes. JAFNPP performs qualitative risks assessment as required by 10 CFR 50.65 and JAFNPP Plant Technical Specification. The program is implemented by JAFNPP On-Line Risk Assessment and Outage Risk Assessment procedures. These procedures require plant risk assessment before removing equipment from service for planned maintenance activities, or upon discovery of equipment out of service that is unplanned. The JAFNPP On-Line Risk Assessment procedure requires an evaluation of current and anticipated grid conditions before removing risk significant equipment from service. The Equipment Out of Service (EOOS) Monitor is a computer based program that is used to calculate Core Damage Frequency and conditional Core Damage Frequency for the plant equipment configuration and testing activities for both planned and unplanned configurations. The JAFNPP Work Management procedure requires a risk plan development for activities that would increase grid instability in combination with external events.
5(b) Is grid status monitored by some means for the duration of the grid-risk-	Yes. 345kV and 115kV grid status is continuously monitored by the TSOs. Changing conditions are communicated to the JAFNPP by the TSOs in accordance with the existing formal agreements and protocols. Notification occurs whether or not maintenance is on-going. The TSOs are required to

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sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?	notify JAFNPP whenever an impaired or potentially degraded grid condition is recognized by the TSOs. Emergent conditions (i.e., significant changes to conditions assumed in the original risk assessment) could change the results of a previously performed assessment. Examples include plant configuration or mode changes, additional structures, systems and components (SSCs) out of service due to failures, or significant changes in external conditions (weather or offsite power availability). When identified, the risk assessment is re-evaluated to address these changes in plant conditions on a reasonable schedule commensurate with the safety significance of the condition. Based on the results of the assessment, ongoing or planned maintenance activities may need to be suspended or rescheduled, and SSCs may need to be returned to service.
5(c) Is there a significant variation in the stress on the grid in the vicinity of your NPP site caused by <u>seasonal loads</u> or maintenance activities associated with <u>critical transmission elements</u>? Is there a <u>seasonal</u> variation (or the potential for a seasonal variation) in the <u>LOOP frequency</u> in the local transmission region? If the answer to either	Yes, the NYISO Reliability Coordinator Area is a summer peaking area. Due to high intra-area and inter-area power flows, it would be expected that the grid would be stressed. However, this stress is managed through facility maintenance coordination. During the summer peak season, transmission facility maintenance is avoided in June, July and August if possible. Anytime that maintenance is scheduled, the schedules are managed in order to maintain operation of the bulk power system within established operating criteria. Yes. Electric Power Research Institute (EPRI) TR-1011759, dated December 2005, indicates there is a statistically significant seasonal-regional variation in recorded LOOP events from 1997 to 2004. The data shows a comparatively higher probability of a LOOP occurring in the summer months in the NPCC region. This correlates with recent NRC publications (e.g., NUREG/CR-6890 and NRC Information Notice 2006-06). Seasonal weighted values of grid-centered events for the JAFNPP region from Table 4-6 of EPRI TR-1011759 are as follows: Spring 0.75 Summer 4.0 Fall - Winter 1.25

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question is yes, discuss the time of year when the variations occur and their magnitude.	
5(d) Are known time-related variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?	No. Time-related variations in LOOP probability are currently not quantitatively evaluated at JAFNPP. For 10CFR50.65 (a)(4) workweek evaluations for activities which may impact availability of the 115kV transmission lines or mitigating systems, JAFNPP uses a single yearly-averaged initiating event frequency for the LOOP. However, since maintenance is performed throughout the year on LOOP-sensitive components (such as EDGs, ESW, etc.), procedural consideration of "high risk" periods (severe weather, grid disturbances, transmission line maintenance, etc.) is applied as described in the answer to question 5(a). Based on this, the averaged initiating event frequency is currently judged to be adequate and changes to this approach will be considered as further information becomes available.
5(e) Do you have contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities?	Yes. TSO communication contacts are implemented per procedure for assessment of grid conditions before performing grid-risk sensitive maintenance activities.
5(f) Describe any formal agreement or protocol that you have with your TSO to assure that you are promptly alerted to a worsening grid condition that may emerge during a maintenance activity.	Notification occurs whether or not maintenance is on-going. The TSOs are required to notify JAFNPP whenever an impaired or potentially degraded grid condition is recognized by the TSOs. Specific examples of known potentially degrading conditions identified in the agreement include: • De-energizing, switching or in-service work on transmission lines associated with JAFNPP • Potentially damaging inclement weather • Solar Magnetic Disturbances • Post-contingency voltage alarm for the 115kV offsite power system • Special system operating configurations The occurrence of emergency events or conditions that threaten the 115kV or 345kV grid stability or

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	reliability requires notification to JAFNPP as soon as possible. De-energizing, switching or beginning in-service work on transmission lines associated with JAFNPP requires prior notification to JAFNPP.
5(g) Do you contact your TSO periodically for the duration of the grid-risk-sensitive maintenance activities?	Yes. The TSOs are contacted before the start of grid-risk sensitive maintenance activities and at the completion of the activity. Changes to grid conditions are communicated to JAFNPP as stated in question 5(f) above. During ongoing EDG or 115kV transmission line maintenance, JAFNPP contacts the TSO every 8 hours.
5(h) If you have a formal agreement or protocol with your TSO, describe how NPP operators and maintenance personnel are trained and tested on this formal agreement or protocol.	Training on integrated risk management, on-line work activities and shutdown safety is mandated in the operators' initial training program and is periodically addressed in the operator requalification program. The method and standard of evaluation for each training topic is specified in the applicable lesson plan.
5(i) If your grid reliability evaluation, performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4), does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).	Not applicable. JAFNPP relies on a proceduralized communication protocol and performs the required evaluations in accordance with 10CFR 50.65(a)(4).
5(j) If risk is not assessed (when warranted) based on continuing communication	Not applicable. Risk is assessed based on continuing communications with the TSO.

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with the TSO throughout the duration of grid-risk-sensitive maintenance activities, explain why you believe you have effectively implemented the relevant provisions of the endorsed industry guidance associated with the maintenance rule.	
5(k) With respect to questions 5(i) and 5(j), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from proposed grid-risk-sensitive activities is assessed before and during grid-risk-sensitive maintenance activities, respectively.	Not applicable. No alternative actions required.

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6. Use of risk assessment results, including the results of grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).	
6(a) Does the TSO coordinate transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator?	Yes. The TSOs coordinate with JAFNPP on transmission system maintenance activities that can have an impact on station operation. Both JAFNPP and TSO procedures have processes to address coordinating transmission system maintenance activities. The process requires advanced notice and subsequent mutual agreement for planned outages to ensure grid reliability is maintained. Once equipment is switched out of service, grid status is monitored by the TSOs.
6(b) Do you coordinate NPP maintenance activities that can have an impact on the transmission system with the TSO?	Yes. Work activities on the 115/345 kV systems that have the potential to affect the operation of JAFNPP as identified in site procedures are coordinated with the TSO by JAFNPP. Other maintenance activities that can potentially impact the transmission system (e.g., voltage regulator maintenance), are also coordinated with the TSO. Site procedures require notification to the TSO for inoperability or maintenance associated with offsite power systems.
6(c) Do you consider and implement, if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?	Yes. JAFNPP plans and schedules grid-risk-sensitive maintenance activities taking into consideration grid conditions. Emergent issues with the grid are managed to maintain a high level of plant safety. At times, appropriate management means rescheduling activities. At other times, this may involve backing out of the task and restoring the safety-related function of the equipment.
6(d) If there is an overriding need to perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive	Yes. The JAFNPP Protected Equipment Program governs the alternate equipment that is protected when grid-risk-sensitive maintenance is in progress. The risk assessment procedure requires minimizing activities that have the potential to result in a plant transient when the risk level is identified that warrants this action. Additional actions such as preplanning to minimize the time of impairment, additional staffing and verifying alternate equipment status are included.

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maintenance when grid conditions worsen, do you implement appropriate risk management actions? If so, describe the actions that you would take. (These actions could include alternate equipment protection and compensatory measures to limit or minimize risk.)	
6(e) Describe the actions associated with questions 6(a) through 6(d) above that would be taken, state whether each action is governed by documented procedures and identify the procedures, and explain why these actions are effective and will be consistently accomplished.	JAFNPP has procedures for evaluating the risk for all maintenance, including grid risk-sensitive maintenance activities, control of on-line maintenance activities and shutdown safety for offline activities. Accomplishment of grid reliability evaluations is assured through the use of procedures. Communication and coordination with the TSO is contained in JAFNPP procedures. Rescheduling grid sensitive maintenance under existing, imminent or degraded grid conditions is part of the risk assessment process and the coordination protocol.
6(f) Describe how NPP operators and maintenance personnel are trained and tested to assure they can accomplish the actions described in your answers to question 6(e).	Maintenance personnel are task qualified by their respective training programs to perform maintenance activities associated with offsite power distribution. The training ranges from basic electrical safety practices to preventive and corrective maintenance on selected switchyard components. Applicable supervisors receive initial and, if necessary, continuing training on the use of the procedures described in 6(e). Operations personnel receive initial and, if necessary, continuing training on the use of the procedures described in 6(e) above. This is mandated in the operators' initial and requalification training programs.
6(g) If there is no effective coordination between the NPP operator and the TSO regarding transmission	Not applicable. JAFNPP has implemented effective coordination with the TSOs regarding transmission system maintenance and risk significant plant maintenance.

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system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).	
6(h) If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.	Not applicable. As discussed in questions 6(a) through 6(d), JAFNPP has established the necessary administrative controls to ensure appropriate risk management actions are effectively implemented.
6(i) You may, as an alternative to questions 6(g) and 6(h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).	Not applicable. No alternative actions are required.

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Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.	
7. Procedures for identifying local power sources[1] that could be made available to resupply your plant following a LOOP event. Note: "Section 2, 'Offsite Power,' of RG 1.155 (ADAMS Accession No. ML003740034) states: "Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable. As a minimum, the following potential causes for loss of offsite power should be considered: - Grid under-voltage and collapse - Weather-induced power loss - Preferred power distribution system faults that could result in the loss of normal power to essential switchgear buses	
7(a) Briefly describe any agreement made with the TSO to identify local power sources that could be made available to re-supply power to your plant following a LOOP event.	JAFNPP has no agreement with the TSOs to identify local power sources. The NYISO and the TSOs have restoration plans which identify how power will be restored to the NPPs as a priority load. The TSOs are responsible for coordinating the restoration of offsite power to the NPP. The NPP is considered a critical facility and restoration of power is a priority. TSO procedures require that, if a black start situation occurs, the TSOs will prioritize restoration of power to the NPPs. Since there is no way to predict the extent and characteristics of a specific blackout, the TSOs will utilize the best sources available for specific events to restore offsite power and to determine the specific power sources and paths. The TSOs have many options available to restore offsite power and would not be limited to identified local power sources. NYISO operating procedures govern prompt restoration of loads within the NYISO control area. While specific generation sources are not defined, priority is given to restoring offsite power to

[1] This includes items such as nearby or onsite gas turbine generators, portable generators, hydro generators, and black-start fossil power plants.

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	NPPs once the power system is re-energized.
7(b) Are your NPP operators trained and tested on identifying and using local power sources to resupply your plant following a LOOP event? If so, describe how.	Yes. In order to properly respond when offsite power sources are restored as described in the response to question 7(a), operators receive classroom, practical and simulator training in the areas of partial LOOP, complete LOOP, grid instabilities, and station blackout. The method and standard of evaluation for each training topic is specified in the applicable lesson plan.
7(c) If you have not established an agreement with your plant's TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.	Not applicable. The NYISO has agreements with area black start capable units in accordance with the NYISO bulk power restoration plan. The NYISO restoration plan identifies restoring power to the NPPs as a priority, and the TSOs are responsible for coordinating the restoration of offsite power to the NPP. The NPP is considered a critical facility and thus restoration of power is a priority.

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Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 site-years in accordance with Table 4 of Regulatory Guide 1.155 for complying with 10 CFR 50.63 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.	
8. Maintaining SBO coping capabilities in accordance with 10 CFR 50.63.	
8(a) Has your NPP experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?	Yes. In 1991, the initial coping duration for the JAFNPP was determined . Since that time, JAFNPP has experienced one grid related LOOP event, which occurred on August 14, 2003 (i.e., Northeast Blackout).
8(b) If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if your NPP should be assigned to the P3 offsite power design characteristic group?	Yes. JAFNPP was reevaluated using the guidance in Table 4 of RG 1.155 and based on this reevaluation, no changes were warranted.
8(c) If so, what were the results of this reevaluation, and did the initially determined coping duration for the NPP need to be adjusted?	The results of the reevaluation concluded that JAFNPP remains assigned to the P2 offsite power characteristic group and the SBO duration capability remains at four (4) hours.
8(d) If your NPP has experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and	Not applicable. The reevaluation has been completed and JAFNPP has determined that it is in compliance with 10 CFR 50.63.

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has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.	

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Actions to ensure compliance	
9. If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.	
Based on applicable NRC SERs, JAFNPP is in compliance with TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59, and 10 CFR 50.120. Accordingly, no additional actions are warranted	