Exelon Generation
4300 Winfield Road
Warrenville, IL 60555

www.exeloncorp.com

Exelon Nuclear

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Commitments and Information Related to Extended Power Uprate

Reference: General Electric Service Information Letter 644, Supplement 1, "BWR Steam Dryer Integrity," dated September 5, 2003

The purpose of this letter is to provide commitments that Exelon Generation Company, LLC (EGC) is making regarding operation of Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, at extended power uprate (EPU) conditions. Attachment 1 to this letter provides a plan for conducting testing and analysis of flow effects at QCNPS Units 1 and 2. Additionally, Attachment 2 to this letter provides the basis for continued operation of Dresden Nuclear Power Station (DNPS), Units 2 and 3, at EPU conditions.

On February 24, 2004, QCNPS Unit 2 was shutdown for a scheduled refueling outage. The scope of the refueling outage included inspections of the steam dryer, in accordance with recommendations described in General Electric (GE) Service Information Letter 644, Supplement 1 (referenced letter). The steam dryer inspection scope was expanded based on the results of the inspections. EGC discussed the results of the inspections with the NRC in conference calls on March 8 and March 18, 2004.

The inspections identified cracking on areas of the steam dryer that were previously modified to address implementation of EPU and to address the QCNPS Unit 2 steam dryer failure in June 2003. The cracking identified in the QCNPS Unit 2 steam dryer in 2004 was considerably less significant than that identified in June 2003. As a result of this cracking, EGC has developed a plan that will be implemented to attempt to identify the mechanism that has been causing unacceptable steam dryer loads. Details of this

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plan were discussed with the NRC during a conference call on March 18, 2004, and are described in Attachment 1. The plan described in Attachment 1 has been developed for QCNPS Unit 2, and a similar plan will be developed for QCNPS Unit 1. The plan will also be used to evaluate flow effects on main steam and feedwater system components.

Additional discussions between EGC and the NRC were held on March 26 and March 30, 2004. During these discussions, EGC and the NRC discussed certain commitments that would be implemented by EGC until evaluations are completed to demonstrate that operation of QCNPS Units 1 and 2 at EPU conditions is acceptable.

EGC has initiated planning to replace the steam dryers at QCNPS at the earliest practical opportunity. The commitments and other actions described in this letter are interim measures to ensure that additional cracking that would impact structural integrity of the steam dryers does not occur as a result of operation at EPU power level.

The following table identifies commitments being made by EGC. Any other actions discussed in this letter represent intended or planned actions by EGC. They are described for the NRC's information and are not regulatory commitments.

Commitment	Committed Date or Outage
EGC will limit operation on both QCNPS units to 2511 MWt (i.e., the maximum original licensed power level prior to NRC approval of EPU), with the exception of one or more brief periods not to exceed a total of 72 hours for each QCNPS unit to allow collection of data as described in the Plan for Evaluation of Flow Effects.	April 2, 2004
EGC will modify the electromatic relief valves on QCNPS Unit 1 based on analysis of previous failures prior to briefly increasing power above 2511 MWt for collection of data as described in the Plan for Evaluation of Flow Effects.	Prior to commencing data collection above 2511 MWt in accordance with evaluation plan
EGC will provide the NRC specific commitments regarding plans for obtaining NRC acceptance of the justification for continuous operation of QCNPS Units 1 and 2 at EPU power level, plans for monitoring the performance of the steam dryer and other potentially affected components, criteria for prompt corrective action in response to performance degradation, a description of the loads on the steam dryer, identification of the most susceptible failure locations, the evaluation of the QCNPS Unit 2 dryer repairs, results of the independent review of the repairs, results of a reevaluation of previous assessments of flow induced vibration, results of the EPU vulnerability team effort, and future steam dryer inspection plans including the need for mid-cycle outages.	Week of May 3, 2004

If you have any questions or require additional information, please contact Mr. Patrick R. Simpson, at (630) 657-2823.

Respectfully,

Jeffrey A. Benjamin
Vice President – Licensing and Regulatory Affairs

Attachments:

1. Quad Cities Nuclear Power Station Unit 2 Plan for Evaluation of Flow Effects
2. Summary of the Basis for Dresden Nuclear Power Station Operation at Extended Power Uprate Power Level

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

Introduction

This attachment describes the plan for data collection and evaluation to be performed by Exelon Generation Company, LLC (EGC) at Quad Cities Nuclear Power Station (QCNPS) Unit 2 relative to operation above the pre-extended power uprate (EPU) full power level of 2511 megawatts thermal (MWt). This attachment also describes the method for notifying the NRC prior to increasing power above the pre-EPU full power level for data collection and the results of the independent review of the plan and evaluation methodology.

Method for Notifying NRC of Plan Initiation

EGC will verbally notify the NRC Senior Resident Inspector at QCNPS, or designee, no later than 24 hours prior to initiating the power ascension above pre-EPU full power for the plan. Once the plan is complete and the unit has been returned to pre-EPU power, EGC will verbally notify the Senior Resident Inspector, or designee.

Data Collection Plan Description

The data collection plan is described in QCNPS Procedure TIC-964, "Q2R17 Steam Dryer Monitoring Plan for Power Ascension from Startup to EPU Power." The plan is designed to record key data to allow evaluation of the effects of EPU power level on the steam dryer, the main steam and main feedwater system components, and other parameters.

The plan provides for collection of selected data as described below at several power levels below the pre-EPU power level during the unit power ascension following the refueling outage. A 24-hour hold point is established at pre-EPU full power to record baseline data. Following site management authorization, reactor power will be increased above pre-EPU full power to the limiting main generator power level of 912 MW electric (MWe). Data will be collected at several intervals. The unit will be held at 912 MWe for a minimum of five hours to collect data at the thermal power corresponding to 912 MWe. Once data collection is complete, power will be reduced to the pre-EPU power level. Procedure TIC-964 limits operation above 2511 MWt to a maximum of 72 hours.

The plan provides for the following types of instrumentation and data collection.

- Pressure monitoring. This instrumentation will record main steam pressure at a sampling rate that is sufficient to detect the amplitudes and frequencies of pressure pulses occurring in the main steam system. This sampling will be initiated at several reactor power levels ranging from pre-EPU power to the limiting main generator power level. Pressure sampling will also be initiated during surveillance testing on the turbine generator, high pressure coolant injection (HPCI) system, and reactor core isolation cooling system to monitor the effect of the changes in the steam path introduced by operation of components in these systems. The pressure sensing equipment will be configured to monitor pressure on the main steam line flow venturis, at the main steam lines near the main steam "D" ring header, and at various reference legs for the reactor vessel level instrumentation system. Monitoring at the reference legs provides the ability to validate the acoustic circuit model at a location inside the reactor vessel steam space as described in the evaluation plan.

- Vibration monitoring. This instrumentation will record vibration amplitudes and frequencies on selected components at several power levels ranging from pre-EPU power to the limiting main generator power level. Data will be taken with handheld equipment on selected portions of the feedwater system, such as discharge drain lines, suction relief valve lines, suction isolation bypass lines, vent and drain lines, feedwater regulating valves, and minimum flow valves. Additionally, vibration data will be recorded with accelerometers mounted on selected portions of the main steam system, including the B main steam line, electromatic relief valves, 1B inboard main steam line isolation valve, Target Rock safety/relief valve, and the HPCI inboard steam isolation valve, which is connected to the main steam system. Finally, handheld measurements of vibration will be collected on the cooling water inlet piping to the condensate booster pump inboard bearings.

- Plant parameters. Reactor pressure, reactor water level, feedwater flows, main steam line flows, and steam flow - feedwater flow mismatch will be manually recorded at various stages of the power ascension.

- Moisture carryover. Moisture carryover from the reactor vessel to the main steam system will be determined at pre-EPU power and at the limiting main generator power level.

Evaluation of Data

Analytical evaluations of the data will be used for two primary purposes. First, the vibration data throughout the range of power operation, together with component failure history and analytical modeling, will be used to assess main steam and feedwater component and system responses for full EPU power operation. These assessments will also utilize the previous QCNPS, Unit 1 assessments and laboratory testing results to evaluate the ability of the main steam and feedwater components and sub-components to perform their intended function throughout the remainder of the current fuel cycle at the EPU power level.

Second, the pressure sampling data will be used to evaluate the conditions affecting steam dryer performance. Evaluations of previous steam dryer failures have concluded that the pressure loadings that cause failure of the steam dryers are most probably from acoustic transmissions rather than dynamic steam pressure changes alone. Thus, these acoustic transmissions must be evaluated and their effects understood. The following analytical approach will be used for this evaluation.

- The data collected will be used to determine the steam dryer pressure-time histories produced by a multi-dimensional acoustic circuit model of the QCNPS Unit 2 main steam lines and reactor vessel upper plenum at various power levels. Acoustic circuit analysis was chosen because it can provide predictions of effects at locations where measurements are not available. Pressure pulses are introduced into the acoustic circuit model and the model is tuned by adjustments that force the model to predict the measured venturi pressure traces. The collection of pressure-time histories at the reactor vessel level instrumentation reference legs and the main steam lines near the "D" ring header allows comparison to these locations and verifies the model predictions.

- The pressure-time histories for different power levels will be applied to a detailed shell and beam finite element model (FEM) of the steam dryer and the resulting forces and displacements will be determined. Selected locations where the stress intensities are the highest will then be evaluated using detailed local FEM models. The use of the detailed shell and beam model and the local FEM models will provide the capability to evaluate QCNPS steam dryer performance in the most susceptible areas of the dryer. Based on the stress amplitudes and the application of the appropriate fatigue strength reduction factors, predictions on cracking can be made by comparing the stresses to the endurance limit of the material.

- The FEM and acoustic circuit analysis will be validated against previous experience. Pressure-time histories based on current pressure measurements at pre-EPU full power will be applied to an FEM of the original QCNPS steam dryer. The analysis prediction will be checked for consistency with the known condition that there were no failures of the pre-EPU steam dryer at pre-EPU power outside normal industry experience (i.e., skirt/drain channel and tie bar cracking). Next, it will be determined whether the model would predict the failures observed after EPU implementation. The pressure-time histories representing the last seven months of EPU operation will be applied to the FEM for the steam dryer with the June 2003 repair. The pressure-time histories will be based on the acoustic circuit analysis results for the power levels experienced in the seven months since June 2003. The analysis prediction will be checked for consistency with the known condition of the steam dryer outer hood in the recent inspections. For both cases, the comparison of the stresses with the endurance limit will be based on reasonable estimates of the stress concentration factor (i.e., not a bounding value) and the nominal value of the endurance limit (i.e., not a lower bound design value).

- Finally, the steam dryer FEM will be modified to reflect the latest repair configuration (March 2004) and pressure-time histories, including those corresponding to the highest thermal power achieved, consistent with 912 MWe, will be applied. The design is acceptable if the stresses are below the lower bound design endurance limit including any fatigue strength reduction factors. If the stresses exceed the acceptable limits, a reduced power level and steam flow will be determined at which the limits are met.

As an alternative to the dynamic pressure-time history analyses, the maximum and minimum pressure values from the acoustic model can be used to assess the relative magnitudes of the pressure loads on the steam dryer for different main steam flow rates. This alternative load scaling approach uses the maximum and minimum pressure values on the outer hood cover plates as predicted by the acoustic circuit analyses to define the relative steam dryer loads for different reactor thermal power levels. The scaling assessment would ratio the pressure loads as determined by the maximum and minimum pressure values for the reactor power level being evaluated to baseline values. The baseline condition for evaluating the steam dryer load is the reactor thermal power level at which QCNPS Unit 2 operated for 90% of the past seven months of operation. It is assumed that the gusset cracks occurred at this reactor thermal power level or greater power levels. An acceptable reactor thermal power level would then be determined such that this ratio is less than the factor of improvement from the steam dryer repairs completed in March 2004. The factor of improvement for the steam dryer repairs is determined from the static finite element stress analysis results using the General Electric repair load definition. The factor of improvement is the ratio of the steam dryer outer hood maximum stress from the June 2003 repair to the outer hood maximum stress for the current steam dryer repairs.

As part of the design effort for replacement steam dryers, EGC is planning future evaluations, including sub-scale model steam dryer testing and further benchmarking of the acoustic circuit analysis. The data and analysis efforts in the plan described above will be essential in these future evaluations.

Results of Independent Review of Plan and Evaluation Approach

EGC contracted with MPR Associates, Incorporated (MPR) to provide an independent review of the data collection and evaluation plan. The review is documented in letters from MPR to EGC. MPR concluded that the approach to data collection and analysis is adequate. MPR cautioned that the validation of the approach against the pre-EPU and post-EPU conditions may be difficult to achieve due to uncertainty within the analyses. MPR also made recommendations to enhance the clarity of the plan description and the power levels to be reviewed as part of the validation effort. MPR also suggested that prior pressure data could be used with the refined acoustic circuit model to perform some preliminary validations. EGC has adopted many of the MPR recommendations and is in the process of evaluating the remaining few recommendations.

As noted in the MPR review, there is a potential that the validation efforts may be unsuccessful due to uncertainties. In developing this plan, EGC has made significant efforts to increase the potential for successful validation, including refinement of the acoustic circuit model, refinement of the steam dryer FEM, and review of previous data to identify and eliminate data quality issues. Additionally, as noted above, the data collected will be essential in future efforts for replacement steam dryer design.

MPR has also concurred with the alternative scaling assessment approach described above.

ATTACHMENT 2
Summary of the Basis for Dresden Nuclear Power Station Operation at Extended Power Uprate Power Level

Overview

An operability determination was performed to assess the applicability of the Quad Cities Nuclear Power Station (QCNPS) Unit 2 steam dryer inspection results, performed in February and March 2004, to Dresden Nuclear Power Station (DNPS), Units 2 and 3. The DNPS Unit 2 steam dryer was modified in October 2003, and the DNPS Unit 3 steam dryer was modified in October 2002 and again in December 2003 to address potential vulnerabilities to increased steam line flow velocities under extended power uprate (EPU) conditions and in response to the failures at QCNPS. The QCNPS steam dryers were damaged from pressure oscillations attributed to high steam line velocities at EPU conditions.

The QCNPS Unit 2 steam dryer inspections in February and March 2004 were performed in accordance with General Electric Service Information Letter (SIL) 644, Supplement 1, "BWR Steam Dryer Integrity," dated September 5, 2003. The inspections revealed four potentially susceptible areas for DNPS. The areas include the outboard end of the tie bars on Banks A-B and E-F, the side of the outboard hoods at the top end of the gussets installed during the recent steam dryer modifications, the attachment welds for the perforated plates along the top of the hoods, and the shop welds on the perforated plate assemblies. The operability determination concludes that the DNPS Units 2 and 3 steam dryers remain operable. The following is a summary of our basis for concluding that DNPS Units 2 and 3 can continue to operate at EPU power levels.

Evaluation

The steam dryer does not perform a safety function. The steam dryer is designed to withstand both normal operational loads as well as design basis events while maintaining its structural integrity and not impacting other structures, systems, and components from performing their safety functions.

Steam line velocities occurring under EPU conditions have been identified as being responsible for generating flow induced pressure oscillation forces in the DNPS and QCNPS steam dryers of sufficient magnitude that exceeded allowables for fatigue considerations. Prior to the DNPS Unit 2 and Unit 3 outages in October 2003, and December 2003, respectively, the magnitude of the pressure loading had not been measured. In December 2003, pressure pulse measurements were obtained for each of the DNPS units under EPU conditions. A series of values were obtained for DNPS Unit 3 during its power ascension after the December 2003 outage. A single data point at approximately 2840 MWt was obtained for DNPS Unit 2 since it was operating steadily at full rated electrical power (i.e., 912 MWe).

Continuum Dynamics, Inc. evaluated this data for both DNPS units. Additional evaluations were performed for both QCNPS units. Based on data acquired to date, the levels of pressure oscillation loads on the steam dryer components at each of the DNPS units is about half of those experienced at QCNPS Unit 1.

The as-found condition of the DNPS steam dryers demonstrates that the crack-driving mechanisms present at DNPS are lower than those present on the QCNPS units. Specifically, the DNPS Units 2 and 3 steam dryers were examined in accordance with General Electric SIL 644, Supplement 1, in October 2003, and December 2003, respectively. The cracking identified on the DNPS steam dryers was limited compared to the degradation that was revealed during the forced outages after each of the QCNPS steam dryer failures. DNPS Unit 2 operated for approximately 700 days under EPU conditions and experienced only minor cracking. The extent of damage revealed during the DNPS Unit 3 outage in December 2003, was also less than either of the QCNPS units. Prior to that outage, DNPS Unit 3 operated for about a year under EPU conditions. The QCNPS units each operated at EPU conditions for less than one year.

During DNPS Unit 2 and Unit 3 outages in October 2003, and December 2003, respectively, General Electric designed and installed modifications on the DNPS steam dryers that replaced or reinforced potentially susceptible areas to reduce stresses. The modifications have significantly stiffened the hood structure, and it is generally now more resistant to fatigue cracking.

There is no evidence that the DNPS steam dryers contain structural degradation. However, an operability evaluation has been performed to address the potential applicability of the QCNPS Unit 2 inspection results from February and March 2004. The locations of the four QCNPS Unit 2 indications are:

1. The top of three of the six gusset plates between the cover plate and outer hood vertical plate,

2. The outboard end on all four of the outer hood tie-bars where the bar connects to the hood skirt,

3. The end of one perforated plate frame stitch weld along the top edge on the outlet side of the hood, and

4. Various shop welds on the perforated plate assemblies.

The following tables summarize the susceptibilities for DNPS Units 2 and 3 and provide the associated evaluations.

Dresden Unit 2 Evaluation	
Component	**Evaluation**
Tie bars	Two cracks were identified on tie bars. One bar was cracked about 50% across the angle cross section with no displacement. The second flaw is at the start of a fillet weld at the end of a bar that runs parallel to the bar about ½ inch in length. There is no structural impact of a broken end weld since the tie bars are also welded to the tops of the steam dryer banks. In order to generate a lost part, the attachment welds at the top of the dryer bank would have to fail.
Gusset plate, diagonal brace internal to the outer hoods	Following 700 days of operation, the longest crack observed at these locations was less than 3 inches in length and not through-wall. This gusset and diagonal brace were removed with the original ½ inch vertical plate on the outer hoods and replaced with 1 inch plate material.

Gusset plate, cover to vertical plate installed in October 2003	The repair installed on DNPS Unit 2 at this location was the same as that installed on QCNPS Units 1 and 2 and is the location most susceptible to fatigue cracking. The damage identified during the QCNPS Unit 2 outage in March 2004 was at this location. The QCNPS Unit 2 repair in March 2004 removed the entire 1 inch repair and remnants of ½ inch plate on the outer hood vertical surface as left after the July 2003 repair and replaced it with a new 1 inch plate and taller shop-welded gussets. The stress level after the DNPS Unit 2 repair at this location was evaluated by General Electric as 4208 psi. A stress concentration of 4 is applied at the top of the gusset. The stress level prior to this repair was 14,159 psi at the top of the vertical plate at the diagonal gusset. A stress concentration of 2 would also be applied at the end of the diagonal gusset. Therefore, the stress levels at the most susceptible location in the repaired steam dryer are lower than those prior to the repair. These evaluations assume the DNPS loads are the same as QCNPS Unit 2. However, based on the acoustic circuit analysis using the pressure oscillations measured to date, the loads imposed on the DNPS Units 2 and 3 steam dryers are approximately half of those experienced at QCNPS.
Perforated plate attachment welds	No cracking was identified at this location during the October 2003 inspections. The size of the attachment welds on DNPS Unit 2 is larger than the leg dimension of the fillets on the other units; therefore, it is less susceptible to this failure mode. The cause of the failure of this weld on QCNPS Unit 2 was due to relative displacement of the hood and superimposed loads due to assembly practices.
Perforated plate assembly welds	These welds were not inspected during the October 2003 inspections. Since most of the perforated plate attachment welds on the top of the hoods were inspected and those inspected were found to be free of cracking, the sample was not expanded to include these shop welds as was done at QCNPS Unit 2. In addition, the two cracks on the tie-bar were minor, so there is less evidence of relative hood motion as was observed on QCNPS Unit 2. If the shop welds are cracked at DNPS, the field weld on the L-bracket will assure that it does not break free. Additionally, for the inner bank perforated plate assemblies, there is a redundant weld between the L-bracket and the hood. This cracking is a result of the relative differential motion between the hoods; therefore, as the crack progresses, the loading caused by the differential motion is reduced. The perforated plates are not structural members.

Dresden Unit 3 Evaluation	
Component	**Evaluation**
Tie Bars	During steam dryer inspections on DNPS Unit 3 in December 2003, no tie bar cracking was identified. As a pre-emptive measure, the tie bars were reinforced. There is no structural impact of a broken end weld since the tie bars are also welded to the tops of the steam dryer banks. In order to generate a lost part, the attachment welds at the top of the dryer bank would have to fail.
Gusset plate, diagonal brace internal to the outer hoods	Through-wall cracking approximately 6 inches in length was identified at the lower end of the diagonal brace gusset during inspections in December 2003. This gusset and diagonal brace was removed with the original ½ inch vertical plate on the outer hoods and replaced with 1 inch plate material.
Gusset plate, cover to vertical plate installed in December 2003	The stress values and load information described for this gusset are as described under the DNPS Unit 2 evaluation. In addition for DNPS Unit 3, an independent design review performed by MPR of the QCNPS steam dryer hood repair recommended extension of these gussets to overlap the reinforced 1" cover plate. The MPR-recommended version of the gussets was installed on DNPS Unit 3 in December 2003. Therefore, the stress at the top of the gusset is reduced from the design installed on the other units by at least 17%.
Perforated plate attachment weld	Most perforated plate attachment welds were inspected in December 2003 and those inspected were found to be free of cracking. The size of the attachment (i.e., field) welds on DNPS Unit 3 are the same as the welds on the QCNPS units and would have been equally vulnerable as those at QCNPS. However, the cause of the failure of this weld on QCNPS Unit 2 was due to relative displacement of the hoods with a superimposed load due to abusive assembly practices. Since there was no tie bar cracking and no attachment weld cracking on DNPS Unit 3, there is no evidence of relative hood displacement. Therefore, the DNPS Unit 3 attachment welds are not subjected to loading that caused cracking at QCNPS Unit 2.

Perforated plate assembly welds	These welds were not inspected in December 2003. Since most of the perforated plate attachment welds and all tie bar welds at the top of the hoods were inspected in December 2003, and no cracking was identified on those inspected, there is no evidence that DNPS Unit 3 is experiencing relative hood displacements. Therefore, the assembly welds are not subjected to loading that could cause cracking and inspections were not performed as was necessary for QCNPS Unit 2. However, if the shop welds are cracked on DNPS Unit 3, the field weld on the L-bracket will assure that it does not break free. Additionally, for the inner bank perforated plate assemblies, there is a redundant weld between the L-bracket and the hood. This cracking is a result of the relative differential motion between the hoods; therefore, as the crack progresses, the loading caused by the differential motion is reduced. The perforated plates are not structural members.

Additionally, plant parameters, including narrow range reactor water level, reactor pressure, main steam line flows, steam flow/feed flow mismatch, and moisture carryover are being monitored for changes that could indicate the presence of failures in the steam dryer. Any unexplained change in the reactor and plant parameters described below are evaluated by Engineering in accordance with the Exelon Generation Company, LLC (EGC) Corrective Action Program. If unexplained moisture carryover is $\geq$ 0.10%, Engineering shall be contacted for resolution. If reasonable assurance of steam dryer structural integrity cannot be confirmed, positive action will be taken to further reduce reactor power up to and including reactor shutdown.

Conclusion

The steam dryer does not perform a safety function; however, the steam dryer is designed to withstand both normal operational loads as well as design basis events while maintaining its structural integrity. The condition of the steam dryers at DNPS Units 2 and 3 supports structure, system, and component operability. The basis for this conclusion is the apparent difference in the loadings between the DNPS and QCNPS units that are responsible for the observed fatigue damage; inspection findings from DNPS Unit 2 and Unit 3 outages in October 2003, and December 2003, respectively; and the acoustic circuit pressure loading evaluation performed by Continuum Dynamics, Inc.

The steam dryer modifications performed have generally stiffened the outer hood surfaces, but the modifications have introduced a new stress concentration at the tip of the three new gusset plates between the cover plate and outer hood vertical plate that is vulnerable to fatigue cracking. However, the stress levels on DNPS Units 2 and 3 are lower than the stresses that existed prior to the repairs in October 2003 and December 2003. As a result, it can be anticipated that minor and inconsequential cracking that is not a structural concern may occur at this location on the DNPS steam dryers.