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(ACCELERATED RIDS PROCESSING)

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SUBJECT: Forwards updated response to deviations noted in EOPs Insp Rept 50-397/91-27,satifying commitment made in 940425 response to Insp Rept 50-397/94-01.

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December 30, 1994
GO2-94-292

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21**
NRC INSPECTION OF WNP-2 EMERGENCY OPERATING PROCEDURES (NRC INSPECTION REPORTS NO. 91-27 AND 94-01)

Reference: 1) Letter, GO2-91-214, dated November 21, 1991, GC Sorenson (SS) to NRC, "NRC Inspection of WNP-2 Emergency Operating Procedures (NRC Inspection Report No. 91-27)"

2) Letter, GO2-94-095, dated April 25, 1994, J.V. Parrish (SS) to NRC, same subject

This letter satisfies the commitment made in Reference 2 to NRC Inspection Report 94-01 to update our response to NRC Inspection Report 91-27 regarding Emergency Operation Procedures (EOP) deviations from the Boiling Water Reactor Owners Group (BWROG) Emergency Procedure Guidelines (EPGs), Rev. 4.

Part "A" responds to the five significant deviations identified in the 1991 EOP Inspection Report. Part "B" is a discussion of other WNP-2 deviations that the NRC requested information for. Some deviations in part "B" were deleted since the 1991 inspection and are so indicated.

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Should you have any questions or desire additional information regarding this matter, please call me or D.A. Swank at (509) 377-4563.

Sincerely,

J.V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

OJB/ml
Attachments

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PART A - FIVE SIGNIFICANT DEVIATIONS IDENTIFIED IN THE 1991 EOP INSPECTION REPORT

1) Prevention of RPV Cooldown with Potential Recriticality

This deviation was withdrawn in the Phase II EOP upgrade.

2) Delayed Entry into Power/Level Control if Two Standby Liquid Control (SLC) Pumps are Running

This deviation was withdrawn in the Phase II EOP upgrade.

3) Deletion of High Pressure Core Spray (HPCS) Net Positive Suction Head (NPSH) Limits

At WNP-2, extensive calculations and preoperational testing have shown that the HPCS pump has adequate NPSH over the entire range of possible wetwell water temperatures while at Technical Specification minimum suppression pool levels for any pump flow. Additionally, the NPSH available at Technical Specification minimum water level is adequate for each of the ECCS pumps at any temperature/pressure condition and pump flow. The drawdown of suppression pool water levels (that could induce air-entrainment vortexing concerns) will reduce the available NPSH for the pumps. However, adequate NPSH remains available down to the vortex limits established using the BWROG EPG Appendix C methodology. There are no temperature/pressure conditions in the wetwell that would limit pump operation because of NPSH concerns before the vortex limits are reached. Therefore, a NPSH curve is not necessary for any ECCS pump. This deviation allowed removal of the HPCS NPSH limit curve from the WNP-2 EOPs providing significant human factors improvement through simplification and removal of unnecessary information on the EOP charts.

4) Deletion of Low Pressure Core Spray (LPCS) and Low Pressure Core Injection (LPCI) NPSH Limits

As identified in item 3 above, the basis for deleting the NPSH limits and curves was evaluated and properly implemented in the WNP-2 EOPs.

5) Incomplete Implementing Procedures for EPGs

WNP-2 has implemented Emergency Support Procedures (ESPs) for completing EOP actions inside and outside of the Main Control Room. All operators have been trained on their usage.

PART B - DISCUSSION OF WNP-2 DEVIATIONS

I. DESIGN DEVIATIONS

A. DESIGN DEVIATION #1 (NRC Inspection Report, Attachment C)

A.1 Description of Deviation

Separate pump NPSH limits to prevent pump damage are not applied at WNP-2. The NPSH required (NPSHR) for the WNP-2 ECCS (including RCIC) pumps is always less than the NPSH available (NPSHA) for these pumps at any pump flow or wetwell temperature condition when suppression pool level is at or above the vortex limits of the respective pump. Consequently, vortex limits bound the NPSH limits and would always be invoked before NPSH becomes limiting.

BWROG EPG Steps: Caution #5, RC/L-2 and C5-3

WNP-2 PSTG Step: None

A.2 August 28, NRC Meeting Response

The NRC indicated that the WNP-2 stance appears justified. The NRC asked if any credit was taken for containment pressure in determining the NPSHA. The response was "no". It was then asked if the containment could be negative. The response was "yes" and that was accounted for in the analysis. The NRC commented that this appeared to be related to a Mark I/Mark II difference. The Supply System agreed.

A.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

A.4 Reason For The Deviation

At WNP-2, extensive calculations (Burns & Roe Calculation 5.19.10) and preoperational testing have shown that the HPCS pump has adequate NPSH over the entire range of possible wetwell water temperatures while at Technical Specification minimum suppression pool levels. Additionally, the NPSH available at Technical Specification minimum water levels is adequate for each of the ECCS pumps at any temperature/ pressure condition. The drawdown of suppression pool water levels (that could induce air-entrainment vortexing concerns) will reduce the available NPSH for the pumps.

However, adequate NPSH remains available down to the vortex limits established using the BWROG EPG Appendix C methodology. There are no temperature/pressure conditions in the wetwell that would limit pump operation because of NPSH concerns before the vortex limits are reached. Therefore, a NPSH curve is not necessary for any ECCS pump. This deviation allowed removal of the NPSH limit curve from the WNP-2 EOPs providing a significant human factors improvement through simplification.

A.5 Technical Basis

Burns & Roe Calculations 5.19.10 "Minimum NPSH for ECCS Pumps"
Supply System Calculation NE-02-89-25, "Vortex Limit of Intake Strainer for HPCS, LPCS, RCIC and RHR Systems".

Technical Memorandum TM-2005 section 3.12

A.6 Impact on BWROG EPG Strategy

Because adequate NPSH is available for WNP-2 ECCS pumps under the conditions specified by Caution #5 and steps RC/L-2 and C5-3 in the EPGs, there is no adverse impact associated with not including this caution and the NPSH curves. There is no change in strategic actions or overall endpoint from taking this deviation.

A.7 Safety Significance

There is no adverse safety significance associated with implementing this deviation at WNP-2 because the ECCS pumps are designed to have adequate NPSH available over the full range of possible pump flows and suppression pool water temperatures as long as levels are maintained at or above the vortex limits of the pumps.

B. DESIGN DEVIATION #2

B.1 Description of Deviation

Simultaneous operation of drywell and suppression pool sprays using the same RHR loop may result in bypassing suppression function of the primary containment.

BWROG EPG Step: None

WNP-2 PSTG Steps: Caution #8, PC/P-1, PC/P-2, PC/P-4, PC/H-3.1, PC/H-3.4, PC/H-4.1

B.2 This deviation was withdrawn for the Phase II EOP upgrade.

C. DESIGN DEVIATION #3

C.1 Description of Deviation

The following caution has been added to all steps which require the use of drywell sprays: "Simultaneous initiation of drywell spray with any other containment spray system may result in exceeding containment design negative pressure and potential loss of primary containment integrity." This caution alerts the operators to the potential adverse consequences of initiating containment sprays simultaneously.

BWROG EPG Step: None

WNP-2 PSTG Steps: Caution #6, DW/T-2, PC/P-2, PC/P-5, PC/H-3.4, and PC/H-4.2

C.2 August 28, NRC Meeting Response

No adverse comments.

C.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

C.4 Reason For The Deviation

This deviation is a direct result of WNP-2's unique containment design. WNP-2 is the only domestic BWR whose containment design incorporates a free standing steel shell. WNP-2 specific calculations show that simultaneous initiation of a drywell spray and any other containment spray in conjunction with a single reactor building-to-wetwell vacuum breaker out- of-service has the potential to fail containment due to negative pressurization.

In concrete containment BWR designs, the negative pressurization capability is much greater than at WNP-2. For these plants, failure to shut the sprays off quickly when the pressure falls to the drywell high pressure scram point is not a safety concern because a substantial margin exists before containment failure. At WNP-2, the steel containment shell can withstand a differential negative pressurization of 2 psid. This is 3.68 psi away from the pressure at which the operators are directed to shut the sprays off.

C.5 Technical Basis

The technical basis for WNP-2 negative containment pressurization transient is covered in calculation 5.08.06, titled "Containment Negative Pressure Analysis for WNP-2", and the associated Technical Memorandum No. 1293, titled "Adequacy of the Primary Containment Vacuum Breakers". The results of these analyses are summarized in Chapter 6.2 of the WNP-2 FSAR. In these documents, simultaneous operation of two containment sprays is considered an operator error.

The design analysis, therefore, considered one spray operation with a single reactor building-to-wetwell vacuum breaker failure or two spray operation without another failure. The design analysis of WNP-2 did not consider two spray operation (an operator error) and a single reactor building-to-wetwell vacuum breaker failure simultaneously. However, from the results of the studies that were performed it is clear that the negative design capability of the WNP-2 steel containment could be exceeded in the two spray, one reactor building-to-wetwell vacuum breaker failure case.

If simultaneous initiation of two containment sprays is not an operator error but rather part of WNP-2 operating procedures; then WNP-2 can no longer meet single failure criterion. This is clearly unacceptable. However, the problem of rapid negative pressurization only applies when starting two spray systems simultaneously.

The physical processes causing the negative pressure spike consists mainly of evaporative and convective cooling. Evaporative cooling is an extremely rapid effect. Appendix B of the BWROG EPGs (OEI document 8390-4B page B-7-28) states the following with respect to evaporative cooling: "Analytical results indicate drywell pressure drops of up to 12 psi can occur in less than 0.5 seconds after initiation of the sprays." The second major effect is convective cooling which occurs at a slower rate. Appendix B of the BWROG EPGs (OEI document 8390-4B page B-7-29) states the following concerning the mechanism of convective cooling: "...an operator can effectively control the magnitude of the drywell temperature/pressure reduction caused by convective cooling by terminating operation of the sprays." Initiation of the first spray in the drywell will cause a rapid evaporative cooling process to start. The subsequent initiation of a second drywell spray would have a much slower negative pressurization effect. If both sprays were initiated simultaneously, the rapid cooldown could be too fast for the vacuum breakers to respond in time to avoid dropping the pressure below the containment shells failure point.

Technically there is no reason to deviate from the use of multiple sprays; only from simultaneous initiation.

C.6 Impact on BWROG EPG Strategy

This deviation does not affect the BWROG Guideline strategy in any way. The BWROG Guidelines use the containment sprays for H_2 control and to reduce the pressure and temperature in containment. The WNP-2 EOPs utilize the sprays for the same purposes at the same places in the procedure. The caution added by WNP-2 only requests that the sprays be initiated sequentially rather than simultaneously.

In addition, sequential initiation is the most probable method of starting the sprays due to controls separation (ie.. it would take to individuals to start both loops of sprays at one time). That is, it is unlikely that the operator would try to initiate two loops at exactly the same time.

C.7 Safety Significance

By adding PSTG Caution #6, WNP-2 complies with the intent of the BWROG Guidelines. The safety significance of initiating containment sprays sequentially rather than simultaneously is considered to be negligible. Also, there is no indication that this is an invalid or inappropriate method of starting the spray headers.

By contrast, the safety significance of not adding PSTG Caution #6 could be significant. By not implementing this deviation, the literal implementation of the BWROG Guidelines could cause the loss of containment integrity and result in an uncontrolled release of radioactive contaminants to the environment.

D. <u>DESIGN DEVIATION #4</u>
(NRC Inspection Report, Attachment A, Item 3 and Attachment C)

D.1 <u>Description of Deviation</u>

When using the turbine bypass valves to depressurize the reactor, WNP-2 does not allow the operators to exceed the Technical Specification cooldown rate until emergency depressurization is required. The generic guidance directs the operator to rapidly depressurize the reactor, exceeding the Technical Specification cooldown rate, if emergency depressurization is anticipated.

BWROG EPG Step: RC/P

WNP-2 PSTG Step: RC/P

D.2 This deviation was withdrawn for the Phase II EOP upgrade.

E. DESIGN DEVIATION #5

(NRC Inspection Report, Attachment A, Item 1)

E.1 Description of Deviation

This deviation has been combined with Strategy Deviation #1.

Allowing RCIC suction from suppression pool in addition to CST is applied at WNP-2.

BWROG EPG Step: RC/P-2

WNP-2 PSTG Step: RC/P-2

E.2 August 28, NRC Meeting Response

See NRC comments on Strategy Deviation #1.

E.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.
See Strategy Deviation #1.

E.4 Reason For The Deviation

See Strategy Deviation #1.

F. <u>DESIGN DEVIATION #6</u>
(NRC Inspection Report, Attachment A, Item 6 and Attachment C)

F.1 <u>Description of Deviation</u>

In step DW/T-1, that portion of the BWROG Guideline which states "defeating isolation interlocks if necessary" is not included in the WNP-2 procedures. WNP-2 EOPs do not direct the operator to defeat the RPV low level and high drywell pressure interlocks to allow return of drywell cooling capability.

BWROG EPG Step: DW/T-1

WNP-2 PSTG Step: DW/T-1

F.2 <u>August 28, NRC Meeting Response</u>

The NRC appeared to understand the WNP-2 basis and reasons for this deviation as the issues and operator priorities were presented. The potential failure of non-ASME piping was not deemed a significant issue, nor considered an appropriate basis for the deviation by the NRC. The NRC did agree that operator actions to accomplish this strategy may be too distracting when there may be more important actions and agreed that it appears successful implementation of this EPG step may be of limited value at WNP-2. The NRC voiced concern that this deviation is removing an option, but agreed with the Supply System's suggestion to prepare an Emergency Support Procedure to place in the Technical Support Center (TSC) and implement this action (pre-planned) from the TSC, if necessary.

F.3 <u>WNP-2 Position</u>

Due to significant operator burden to implement this step and its limited significant short-term benefit (noted below) this deviation will be maintained in EOP Phase II implementation. However, to ensure no mitigation strategies are eliminated, WNP-2 has developed a procedure to allow implementation of this strategy if use for long-term mitigation.

F.4 Reason For The Deviation

The WNP-2 drywell cooling system containment isolation valves will close on low reactor water level or high drywell pressure signals. These parameters are indications of a potentially significant abnormal plant condition. Symptomatically overriding the interlocks to the containment isolation valves to return to normal drywell cooling does not seem prudent without first understanding the plant condition.

If the isolation signal is due to a primary system break, an RCC pipe may have been broken in the same initiating incident. Overriding the isolation interlock would then result in an unnecessary release path.

F.5 Technical Basis

Symptomatically overriding the isolation interlocks to the drywell cooling system is inappropriate for WNP-2 because it may cause an unnecessary radiation release. In addition, even if the interlocks are defeated the drywell cooling system may not function or, at best, will have a negligible effect on long term heat removal from containment.

At WNP-2, the process for reestablishing drywell cooling following an F (high drywell pressure) or A (low RPV water level) isolation signal is both complicated and time consuming. The ability to reestablish drywell cooling is dependent on the availability of Division 1, 2 and offsite power. Division 1 and 2 power is necessary to reopen the containment isolation valves on the cooling water supply and return lines and offsite power is necessary to operate the required cooling water pumps (both RCC and TSW). The ability to reestablish cooling using the onsite emergency diesel is not considered reasonable due to the difficulty associated with manually shedding emergency loads and manually jumpering power to the required cooling pumps. Therefore, given that the necessary power is available, the trip signal to four valves must be jumpered, two on the cooling water supply and two on the cooling water return. In addition, jumpers to restore the five drywell cooling fans must also be installed. These jumpers can be installed in control panels in the main control room. Jumpers must also be installed to restart the service water pumps(s) (TSW-P-1A/1B) and drywell closed cooling pumps (RCC-P-1A/1B). These jumpers must be installed in local switchgear compartments for the respective pumps. These switchgear compartments are located outside the main control room. The evolution to restore drywell cooling is expected to take greater than 30 minutes and may require two or more operators to install jumpers and reenergize the required pumps and valves.

This complicated and time consuming task, as discussed in the technical basis section provides limited benefit. When this benefit is balanced against the required time and manpower to execute, it is not considered an effective use of operator personnel during the short-term response of any significant plant event. Therefore, this strategy will be executed only with the Plant Emergency Director concurrence and at a time when additional manpower will be available to implement.

In any containment pressurization event which results in a high drywell pressure signal (1.68 psig), the density of the containment atmosphere will be outside the working parameters for the cooling fans. Motor load test data for similar fans operated at elevated pressures show that the drywell cooling fans would overload and trip the motor supply breakers. Therefore, continued operation at containment pressures above the high drywell setpoint may not be possible and defeating this interlock may not provide the intended cooling function.

Also, in WNP-2's Mark II containment, the suppression pool capacity is extremely large in comparison to normal drywell cooling capacity. The heat removal from containment during a full hour of normal drywell cooling equates to only 0.78°F rise in suppression pool temperature. Thus, even if drywell cooling is restored and the pressure in containment is low enough to allow the fans to operate, the effect is negligible.

F.6 Impact on BWROG EPG Strategy

The impact on the BWROG EPG strategy is minimal. If drywell coolers are available they are used. This is in line with the BWROG EPG philosophy that the first step in each emergency procedure be consistent with normal plant recovery procedures.

F.7 Safety Significance

A significant plant event (e.g., LOCA) would cause isolation of the drywell cooling system. Symptomatically unisolating drywell cooling in such an event could cause an unnecessary radiation release. The energy removal capability of the drywell cooling system is insignificant when compared to the total energy that is potentially available in containment. Therefore, reestablishing drywell cooling by defeating the interlocks would not contribute significantly to mitigating the event, while maintaining containment isolation could significantly mitigate offsite dose consequences.

G. DESIGN DEVIATION #7
(NRC Inspection Report, Attachment C)

G.1 Description of Deviation

Direction to vent the primary containment "before wetwell pressure reaches the PCPL" has been modified to assure that venting does not commence while the containment pressure is within analyzed limits (below 39 psig). The direction to spray the primary containment (irrespective of core cooling concerns) is given "when wetwell pressure reaches the PCPL" instead of the BWROG guidance "when the suppression chamber cannot be maintained below the PCPL".

BWROG EPG Steps:	PC/P-4 and PC/P-6
WNP-2 PSTG Steps:	PC/P-4 and PC/P-5

G.2 This deviation was withdrawn for the Phase II EOP upgrade.

H. DESIGN BASIS DEVIATION #8

H.1 Description of Deviation

The BWROG EPG steps, for initial hydrogen control, to vent and purge the drywell to maintain combustible gas concentrations below minimum detectable levels is not given in the WNP-2 PSTG. Instead WNP-2 uses the installed hydrogen recombiner system, to avoid potentially contaminated releases from primary containment.

BWROG EPG Steps: PC/H-1, PC/H-1.1, PC/H-1.2 and PC/H-1.3

WNP-2 PSTG Step: None

H.2 August 28, NRC Meeting Response

No adverse comments.

H.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

H.4 Reason For The Deviation

The discussion in Appendix B of the BWROG EPGs (OEI document 8390-4B) for step PC/H-1 (page B-7-115 and -116) states:

> "The existence of a detectable amount of hydrogen in either the drywell or the suppression chamber warrants corrective action irrespective of the condition which required entry into this guideline. Venting and purging is the method normally used to control primary containment atmosphere conditions, and it is therefore the first method employed to reduce hydrogen concentration at this point. Although continued increases in hydrogen concentration will directly threaten containment integrity, hydrogen concentrations near the minimum detectable are not by themselves containment threatening and therefore venting and purging at this point is permitted only if it can be done within the limits prescribed for normal (non-emergency) plant operation.

> Consistent with plant-specific procedures it is appropriate to wait for the results of an analysis of a primary containment air sample before commencing the vent and purge procedure. If existing plant conditions and the most recently obtained air sample.results suggest that the release to areas outside of containment will remain within Technical Specification requirements, the vent and purge may be initiated."

At WNP-2, the "normal" procedural means of dealing with hydrogen in the primary containment atmosphere is through initiation of the containment atmospheric control (CAC) system, which contains divisional redundant hydrogen recombiners designed in accordance with Regulatory Guide 1.7, Rev. 1 and General Design Criteria 41, 42 and 43. The recombiners can operate safely down to 0% hydrogen concentration. Hydrogen control design basis calculations performed by Burns and Roe (5.34.10) indicate that although inefficient recombination occurs at low hydrogen concentrations, the resultant temperature rise is also less than experienced with higher concentrations (and efficiencies), resulting in more favorable equipment operating conditions. In addition, WNP-2 has a divisional redundant state-of-the-art hydrogen-oxygen analyzer system that continuously monitors hydrogen and oxygen concentrations in the drywell and suppression chamber airspace. Initiation of the CAC system on the low limit of detection (defined to be 0.5% hydrogen for reliability), will consistently provide combustible gas control as rapidly as a controlled purge and vent scenario would.

The WNP-2 design basis for hydrogen control in primary containment is described in the FSAR (primarily section 6.2.5). Extensive analysis of the two redundant recombiner systems were performed and are reported in the FSAR. These analyses were reviewed by the NRC and several question/answer issues resolved. Section 15.6.5.5.1.2 states that no containment purge is necessary, nor was it evaluated for offsite consequences for hydrogen control, because the redundant recombiners can effectively process the full spectrum of anticipated hydrogen concentrations. Therefore, purging of containment for hydrogen control was specifically excluded in WNP-2's licensing and design basis. A containment purge system is available, see sections 6.2.1.1.8.3 and 6.2.5.2.4 to meet Regulatory Guide 1.7 guidance, should higher than anticipated hydrogen concentrations be present.

The WNP-2 position is that two 100% capacity hydrogen recombiner systems will be used for hydrogen control consistent with the plant licensing basis as opposed to containment vent and purge. The main impact of this deviation is to potentially start the recombiners earlier than prescribed in the EPGs.

Finally, WNP-2 has not implemented hydrogen water chemistry and has not experienced any detectable hydrogen levels during normal plant operation. Thus, operational sources of hydrogen are not anticipated.

H.5 Technical Basis

WNP-2 FSAR sections 6.2.5, 6.2.1.1.8.3, 9.4.11.3 and 15.6.5.5.1.2

WNP-2 SER section 9.4

Regulatory Guide 1.7, Rev. 1

10 CFR 50 Appendix A, General Design Criteria 41, 42 and 43

NRC Questions 022 series, 281.009, 312.016 and 423.041

Burns & Roe Calculation 5.34.10

H.6 Impact on BWROG EPG Strategy

At WNP-2, each of the two 100% capacity hydrogen recombiners are designed to control the full spectrum of anticipated hydrogen concentrations in the primary containment, and are qualified to operate for at least six months in a post-LOCA environment. Their use in the manner prescribed in the WNP-2 EOPs is consistent with minimizing doses to the public. Using the recombiners is the next step following purging and venting prescribed by the BWROG EPGs as hydrogen concentrations increase. Therefore, the WNP-2 strategy will not result in a different endpoint than the EPG approach, but will only eliminate a period of containment purge and vent of potentially radioactive gases. No adverse impact on our recombiner equipment is anticipated. This deviation is consistent with the EPG philosophy of using the "normal" mitigation systems first in accident control.

H.7 Safety Significance

There is no safety significance associated with this deviation. The endpoint of the WNP-2 EOPs is the same as the EPGs. WNP-2 is designed and licensed to control hydrogen consistent with our EOP strategy. Finally, this deviation is consistent with the guidance taken by WNP-2 from the EPG Rev. 4 SER (pages 30-31) which states:

> "The staff had requested the BWROG to provide additional clarification on the need for this step since it would appear that a minimal detectable hydrogen concentration condition and the offsite radioactivity release rate below the LCO to be an unlikely combination. This comment was predicated on hydrogen generation from the zirconium (cladding) metal water reaction being the dominant contributor. Further, the staff believes that venting may not be necessary based solely upon hydrogen concentrations above the minimal detectable level and below the flammability levels. The staff believes the use of recombiners is valuable and should be utilized where appropriate."

Thus, WNP-2 is consistent with Staff direction in the SER to utilize recombiner as initial response for hydrogen control when hydrogen is below the flammability levels.

I. DESIGN BASIS DEVIATION #9

I.1 Description of Deviation

Drywell suction for the H_2 recombiner was not explicitly specified in the WNP-2 PSTG because this is the normal system alignment.

BWROG EPG Step: PC/H-2.1

WNP-2 PSTG Step: PC/H-1.1

I.2 This deviation was withdrawn for the Phase II EOP upgrade.

J. DESIGN BASIS DEVIATIONS #10, 11 & 12
(NRC Inspection Report, Attachment C)

J.1 Description of Deviation

Wetwell suction is not specified for WNP-2. (Instead hydrogen recombiners are operated with suction from the drywell while discharging into the wetwell.)

Hydrogen recombiner system operable range is based on "drywell" hydrogen/oxygen concentration rather than "wetwell" hydrogen/oxygen concentration.

Direction to operate the drywell hydrogen mixing system is given.

BWROG EPG Step: PC/H-3.1

WNP-2 PSTG Step: PC/H-2.1

J.2 This deviation was withdrawn for the Phase II EOP upgrade.

K. DESIGN DEVIATION #13

K.1 Description of Deviation

Defeating isolation interlocks to allow restart of the reactor building HVAC is not specified in the override which precedes SC/T. WNP-2 EOPs do not direct the operator to bypass the RPV level and high drywell pressure interlocks to return the reactor building HVAC to operation.

BWROG EPG Step: Override prior to SC/T

WNP-2 PSTG Step: None

K.2 August 28, NRC Meeting Response

The NRC asked how the required differential pressure would be maintained. The Supply System response was that it was maintained by the standby gas treatment system.

No adverse comments; the NRC seemed to view this as a fairly straight forward issue.

K.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

K.4 Reason For The Deviation

The WNP-2 design provides for a secondary containment isolation on low RPV water level, high drywell pressure and high secondary containment radiation level. To direct the operator to bypass the low RPV water level and high drywell pressure interlock whenever isolation is caused by these signals is contrary to defense in depth concepts. The intent of this override in Appendix B of the BWROG EPGs (OEI document 8390-4B page B-8-25) is to reestablish the normal means of cooling secondary containment to control critical equipment area temperatures. At WNP-2, the temperature of critical areas in secondary containment is adequately controlled by separate safety grade room coolers which are initiated upon isolation of secondary containment. Upon initiation, the areas cooled by these emergency coolers are automatically isolated from the normal reactor building HVAC. Consequently, reestablishing the normal reactor building HVAC will not provide or enhance cooling in these areas.

K.5 Technical Basis

WNP-2 plant design provides for isolation of secondary containment in anticipation of a potential release to the environment. Safety grade area and room coolers are provided to maintain these critical equipment areas within acceptable limits. If isolation is caused by an abnormal event and recovery is achieved prior to attempting HVAC restart, the interlocks may be reset and HVAC restarted as appropriate. If restart of the reactor building HVAC is completed and then later isolation delayed until the high radiation setpoint is reached, some release would occur as radioactivity concentrations in secondary containment increase to the high level isolation setpoint.

K.6 Impact on BWROG EPG Strategy

Many BWRs do not have safety grade cooling systems in critical areas of secondary containment. WNP-2 utilizes safety grade room and area coolers which maintain the environment within acceptable limits. Therefore, the objectives of the strategy are implemented by utilizing these safety grade coolers.

K.7 Safety Significance

Implementation of this deviation will not significantly impact safe plant operation. The primary reason is that the safety grade area and room coolers will maintain the secondary environment within acceptable limits. Removal of the interlocks will not provide any additional cooling to WNP-2 critical areas.

L. DESIGN DEVIATION #14

L.1 Description of Deviation

If core damage is indicated, isolate feedwater lines (valves RFW-V-65A, 65B) within 20 minutes after feedwater flow stops, and initiate MSLC if RPV pressure is below 35 psig.

BWROG EPG Steps:	None
WNP-2 PSTG Steps:	Formerly Steps C1-1 and C1-2

L.2 This deviation was withdrawn for the Phase II EOP upgrade.

M. DESIGN DEVIATION #15

(NRC Inspection Report, Attachment A, Item 2 and Attachment C)

M.1 Description of Deviation

Prior to the step defined by the generic EPG strategy as the "last measure" to regain adequate core cooling via containment flooding for non-ATWS events, WNP-2 has inserted the plant specific analyzed condition for adequate core cooling of 2/3 core submergence with core spray(s) injecting at 6000 gpm. The generic strategy defines core submergence as the only acceptable core cooling method.

BWROG EPG Step: C1-4.2

WNP-2 PSTG Steps: C1-3 and C1-4

M.2 August 28, NRC Meeting Response

Even though WNP-2 is analyzed to this 2/3 RPV level and 6000 gpm core spray criteria, which can be achieved with one pump, the NRC stated that there is still a concern on long-term reliability. Therefore, the NRC stated that WNP-2's position to delay containment flooding would be acceptable if both core spray pumps were operable. WNP-2 agreed to consider the NRC's recommendation as part of our EOP Phase II upgrade.

M.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade, but will include the additional criterion that two core spray pumps (LPCS and HPCS) be operable. WNP-2 will add this criterion based on NRC recommendation.

M.4 Reason For The Deviation

This deviation is taken to provide the operators the maximum amount of time possible before going to the step of last resort, containment flooding. This delay strategy provides some additional time for radioactive source term decay and plateout prior to initiating the large release associated with venting PC and the RPV and, if sufficiently long, would allow restoration of other mitigation measures that may prevent the offsite release.

M.5 Technical Basis

EPG Rev. 4 Contingency #1, Step C1-4.2 directs emergency RPV depressurization followed by primary containment flooding if water level cannot be restored and maintained above top of active fuel (TAF). The WNP-2 licensed design basis for LOCA recognizes that at the top of the jet pumps (two thirds core height) adequate core cooling is achieved by a combination of steam cooling and spray cooling. The WNP-2 FSAR (page 6.3-24) states that the core remains covered to at least the jet pump suction elevation, and that the uncovered region is cooled by spray cooling as calculated by GE generic analysis (NEDO 20566P). This 10CFR50.46 existing analysis establishes that peak clad temperatures (PCT) will not exceed 2200°F.

WNP-2's strategy is not in conflict with the intent of the generic EPGs, which, as pointed out in Appendix B of the BWROG EPGs (OEI document 8390-4B page B-15-1) is attempting at this stage to restore adequate core cooling. The generic EPGs identify adequate core cooling as core submergence and only core submergence. The above cited analysis demonstrates that for WNP-2, adequate core cooling can also be achieved by 2/3 core water level with core spray(s) at 6000 gpm. The generic strategy further goes on to state that containment flooding is "a measure of last resort" (reference Appendix B of the BWROG EPGs, OEI document 8390-4B page B-10-34) to reestablish core submergence. Flooding too early in an event sequence can in itself challenge the integrity of containment. Under these conditions, a loss of containment integrity due to flooding to regain core submergence would suggest that the core was being prioritized over containment integrity. This prioritization is opposite to the stated overall strategy of the Rev. 4 EPGs, which is to preserve the containment over the core. Note: at WNP-2, flooding containment results in a loss of the pressure suppression function, loss of ability to spray the drywell, loss of vacuum breakers, loss of reactor relief valves and submergence of all RPV vent paths required to vent the reactor (such as MSIV and MS drains). The valves required to reisolate the vent lines are not designed to operate under submerged water conditions. Inability to reclose containment vents may result in permanent loss of containment integrity if outboard isolation valves cannot be closed. Therefore, the action to flood could prioritize the core rather than the containment during a condition where adequate core cooling is being maintained.

M.6 Impact on BWROG EPG Strategy

WNP-2 views the 2/3 core coverage with core spray(s) at 6000 gpm as an extension of the generic strategy. It allows the delay of containment flooding, thereby either eliminating or reducing radiological releases. This strategy would then allow containment flooding to be accomplished through a very slow process with controlled filtration of the vented containment atmosphere.

If 2/3 core height with core spray cannot be maintained, WNP-2 will immediately flood containment in accordance with the BWROG EPG strategy.

M.7 Safety Significance

For cases where the delay results in avoiding containment flooding by successfully restoring alternate mitigation measures, there is no adverse safety significance. For the cases where only a delay in flooding results, the radioactive source term released would be reduced, with a consequent reduction in offsite doses.

N. DESIGN DEVIATION #16
(NRC Inspection Report, Attachment A, Item 4 and Attachment C)

N.1 Description of Deviation

HPCS, which injects inside the shroud, is allowed as an RPV injection source to flood or refill the RPV during an ATWS, provided that ALL of the following exist:

BOTH SLC Pumps are operating
Reactor Power is above 2%
Reactor Power NOT increasing

As recommended by the BWROG Guidelines, if boron is not being injected, use of the HPCS system would not be allowed.

BWROG EPG Steps: C4-1.3, C5-3 and C5-3.2

WNP-2 PSTG Steps: C4-1.3, C5-3 and C5-3.2

N.2 August 28, NRC Meeting Response

The NRC stated that it was not acceptable to allow HPCS injection during an ATWS due to boron dilution and core instability concerns. WNP-2 responded that due to the significant analysis capability necessary to justify this deviation to the NRC, we intend to withdraw this deviation. This deviation had been identified to be withdrawn prior to the August 28, 1991 meeting. The NRC concurred with WNP-2's response to withdraw this deviation.

N.3 WNP-2 Position

WNP-2 will maintain this deviation in the Phase II EOP upgrade.

N.4 Reason For The Deviation

WNP-2 is designed and analyzed to use the HPCS spray header as the method for introducing SLC sodium pentaborate into the RPV. Operation of the HPCS system decreases the transport time for the boron to reach the core and is therefore desirable for those events when the plant is not shutdown, i.e., ATWS.

N.5 Technical Basis

The BWROG Guidelines discuss the reasons for using the injection systems specified at this step. The main theme noted for C4-1.3 is as follows:

> "The systems identified for use here are those utilizing motor-driven pumps and injecting outside the shroud. These systems are used preferentially in order to mix cold, unborated water injected into the RPV with warm, borated water prior to it reaching the core.
>
> The applicability of Caution #5 is identified at this step to highlight the concern regarding a reactor power excursion occurring if injection is performed too rapidly."

This discussion is directed at that category of plants which inject boron into the lower plenum via the SLC standpipe. For these plants it is important to refill the RPV from systems which fill from outside the shroud to prevent displacement of boron from the core. WNP-2 utilizes the HPCS sparger to inject boron into the RPV. With this method of boron injection, the water injected by the HPCS would be borated and it is unnecessary to circulate the borated water from the lower plenum to maintain borated water in the core. In addition, since the water is introduced as a spray in the upper plenum, near thermal equilibrium with the mixture in the plenum is achieved before the water enters the core. A plant specific best estimate analysis for WNP-2 (FSAR section 15.8) shows that good mixing of boron will occur between the lower plenum, core, upper plenum and shroud areas.

N.6 Impact on BWROG EPG Strategy

Use of the HPCS system is allowed during an ATWS, provided that ALL of the following exist:

BOTH SLC Pumps are operating
Reactor Power is above 2%
Reactor Power NOT increasing

Because the HPCS is borated, the concern for power excursions due to injection of unborated water is significantly reduced. This direction therefore preserves the BWROG strategy.

N.7 Safety Significance

There is little safety significance associated with implementing this deviation. Because the HPCS injection is borated to greater than shutdown boron concentrations, any power excursions caused by the injection of the cool borated water would be minimal.

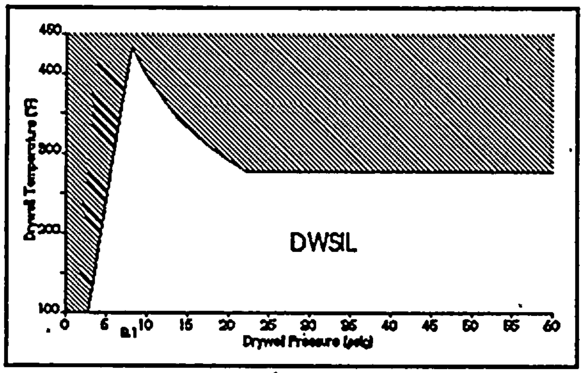
O. DESIGN DEVIATION #17

O.1 Description of Deviation

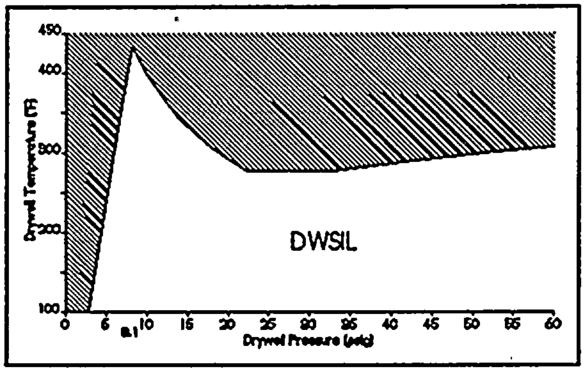
The BWROG EPG Appendix C Drywell Spray Initiation Limit (DSIL) worksheet (WS-3) resulted in a curve for WNP-2 which prohibits the initiation of drywell sprays under drywell pressure-temperature conditions at which the WNP-2 licensing basis assumes their use. The DSIL calculation was modified to overcome this conflict with the Design Basis. WNP-2 also intends to modify the curve further. The DSIL curve resulting from this additional modification is addressed as the "proposed" WNP-2 DSIL curve in the following discussions. (Note: Neither the Basis nor the intent of the EPG was violated in taking this deviation.)

BWROG EPG Step: None

WNP-2 PSTG Step: None



Generic DWSIL



WNP-2 DWSIL

O.2 a) August 28 NRC Meeting Response

No adverse comments. There was considerable discussion with the NRC on this topic. The primary thrust of the discussion was to clarify both the EPG basis for the curve as well as the Supply System's deviation to the curve to accommodate its drywell-to-wetwell bypass leakage event. The NRC indicated they would contact the Supply System if they had further questions on this deviation.

b) NRC Request for additional information:

By letter dated April 12, 1993, the NRC requested the Supply System to indicate whether this deviation was submitted to the Boiling Water Reactor Owners Group for review. The NRC stated that changes to the DSIL curve should be addressed to the BWROG and that the Supply System should ensure that changes to this curve are consistent with its purpose developed by the BWROG.

The deviation taken with respect to the present WNP-2 DSIL curve was submitted to the BWROG EPC-II Committee (EPC) in March 1993 (San Jose, California meeting). Although the EPC did not approve the particular DSIL curve developed by WNP-2, it did agree with WNP-2's basis that the DSIL could be adjusted to account for Drywell humidity (June 1993 Minneapolis meeting and November 1993 Monterey, California meeting). In response to the comments received at these EPC meetings, WNP-2 decided to recalculate the curve using the GOTHIC containment response analysis code. WNP-2 presented the method and the assumptions to be used in the recalculation to the EPC in June 1994 (Minneapolis , Minnesota meeting) and the results of the calculation at the September 1994 (Portland, Maine) meeting. At this September 1994 meeting the EPC adopted the following position:

"The Committee agreed that the Appendix C methodology need not be used to calculate the EPG plant-specific curves and variables. Specifically, a plant-specific analysis to calculate the Drywell Spray Initiation Limit (DSIL) is completely acceptable as long as the requirements identified in Appendix A are satisfied. Further, a Utility may elect to calculate the DSIL based on requirements which differ from those in Appendix A (e.g., vacuum breakers open during the transient, initial humidity is greater than zero). In this case as with any other deviation from EPG Rev. 4, it is the responsibility of the Utility to justify the different requirements."

Based on this position of the EPC, WNP-2 intends to adopt the (plant-specific) DSIL curve identified as the "Proposed" WNP-2 DSIL Curve in the figure in Section O.6, following formal documentation of the supporting WNP-2 calculation. The deviations and the justifications for the deviations involved in developing this curve are presented in section O.6 below.

O.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade. The deviation taken for the present DSIL curve will be replaced by those to be taken for the proposed curve. The proposed deviations and the corresponding justifications are presented in section O.6 below.

O.4 Reason For The Deviation

The purpose of the DSIL curve is to guide the operator in the decision as to when it is safe to use the drywell sprays. The generic guidelines are concerned with the extremely rapid effects of evaporative cooling. Appendix B of the BWROG EPGs (OEI document 8390-4B page B-7-28) states the following with regard to evaporative cooling:

> "In the drywell with typical drywell spray flowrate, this cooling process results in an immediate, rapid, large reduction in pressure which occurs at a rate much faster than can be compensated for by the primary containment vacuum relief system. Analytical results indicate drywell pressure drops of up to 12 psi can occur in less than 0.5 seconds after initiation of the sprays."

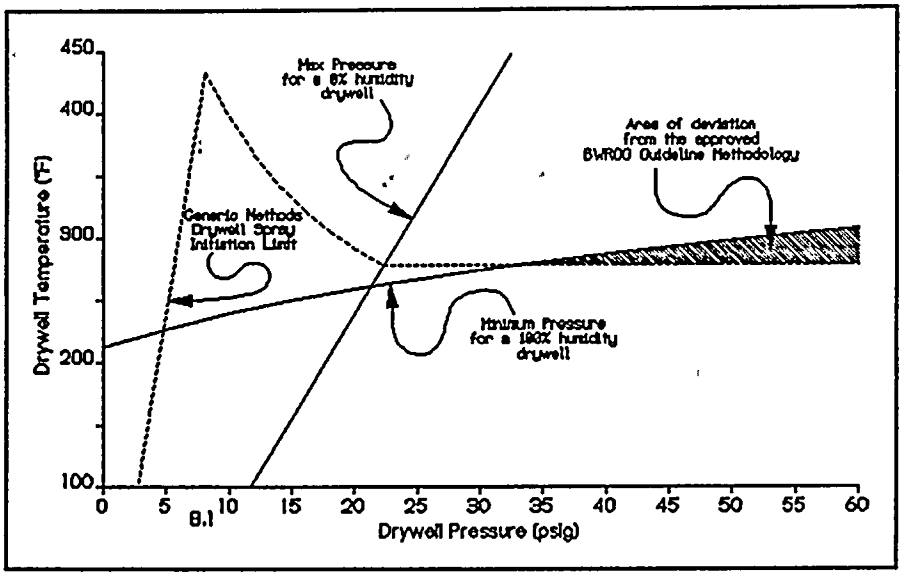
Appendix B of the BWROG EPGs also discusses convective cooling and states that the DSIL is not concerned with those effects. On page B-7-29, Appendix B states the following concerning convective cooling:

> "...an operator can effectively control the magnitude of the drywell temperature/pressure reduction caused by convective cooling by terminating operation of the sprays."

Thus, the DSIL is not concerned with convective cooling effects, only the very rapid evaporative cooling effects. However, for WNP-2 the DSIL curve calculated per the EPG Appendix C guidelines would prohibit the use of drywell sprays under drywell pressure-temperature conditions under which the drywell is bound to have a significant amount of humidity and evaporative cooling would have an insignificant effect. Thus this prohibition is not necessary to meet the bases and intent of the DSIL. In addition, the prohibition creates a conflict with the Design Basis for WNP-2 because it prohibits the use of drywell sprays at conditions under which the Design Basis analysis assumes the use of sprays. Therefore, the reason for this deviation is that it is required to meet the WNP-2 design basis . (Note that it does so without violating the basis or the intent of the DSIL in the EPG).

The above is true both for the present WNP-2 DSIL curve deviations as well those to be taken for the proposed curve.

O.5 Technical Basis Present WNP-2 Plant-specific DSIL curve:



The design basis scenario which conflicts with the BWROG version of the curve is found in section 6.2.1.1.3.3.5 of the WNP-2 FSAR. The scenario is a small to intermediate size (less than 0.4 ft^2) primary system break coupled with the maximum allowable drywell-to-wetwell bypass leakage. This scenario produces a containment atmosphere condition widely different than the conditions assumed in the generic DSIL calculation. Evaporative cooling produces large effects in hot dry atmospheres, while the atmosphere in a LOCA scenario is hot and saturated.

It is possible to show that, for high temperatures or pressures the region of all possible dry containment states and the region of all possible saturated containment states are mutually exclusive. That is, given an initial mass, there are pressures and temperatures at which a dry containment may exist that a saturated containment cannot and vice versa.

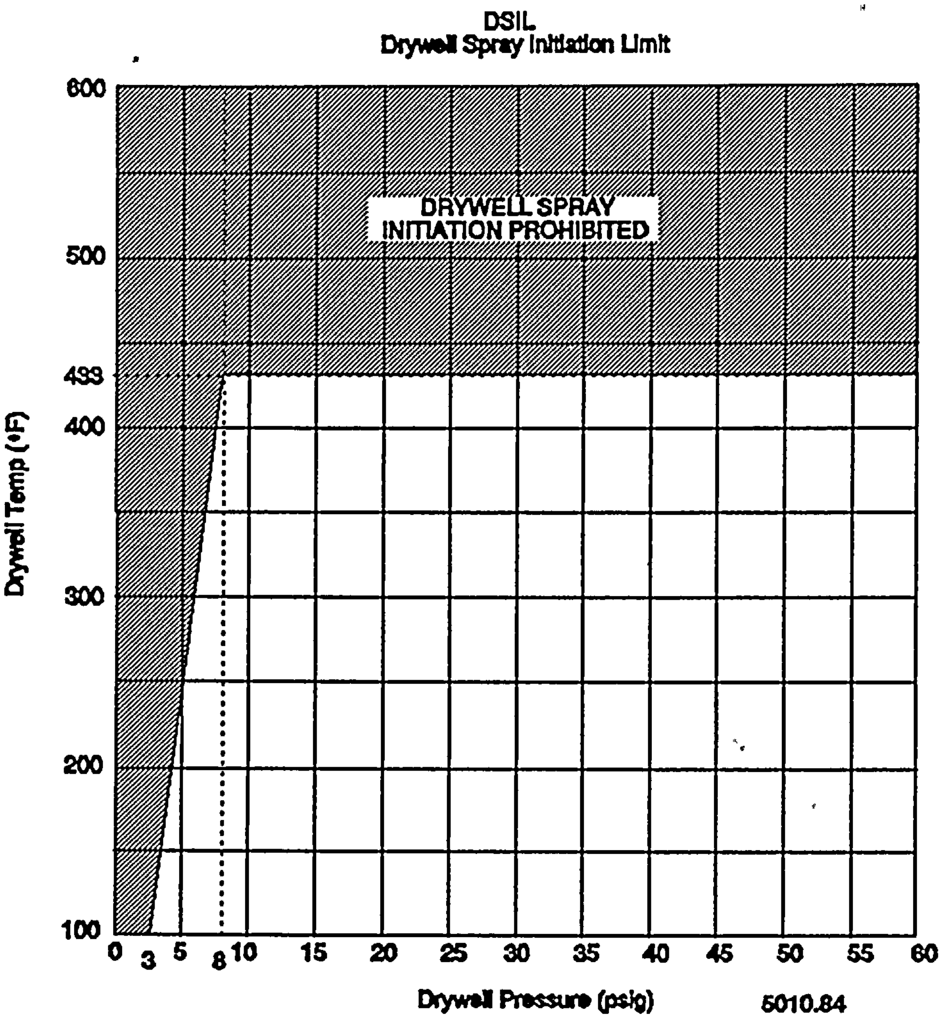
The BWROG methodology defines a variable "Tdw-min(Pdw)" which is a line describing the drywell temperature as a function of pressure assuming that all the nitrogen originally in the containment has been transferred to the drywell and is at 0.0% humidity. This line provides an upper bound to the pressure in the drywell for all isolated containment situations if the drywell is completely dry.

For cases in which the humidity is 100%, a line may be drawn on the same graph which defines the minimum possible pressure in the containment as a function of temperature, by assuming that all of the nitrogen has instead been transferred to the wetwell. This line is simply the saturation line for water vapor.

The figure shows these two curves as well as the DSIL which is developed from the generic guidelines. On the right side of the curve is an area where the water vapor saturation line is above the DSIL. This is also the region where WNP-2 licensing basis calculations have assumed that the containment sprays would be used in a LOCA type accident.

Because this region is outside of the confines of the assumptions in the generic methodology, there is no conflict with the guidelines in adding this region to the DSIL. Additional operating margin is gained and the original function of the drywell spray header is maintained.

O.6 Technical Basis Proposed WNP-2 Plant-specific DSIL Curve:



Deviations and Justifications:

The deviations from the EPG, Revision 4 involved in developing the proposed WNP-2 plant-specific DSIL curve are as follows:

a) Use of the GOTHIC containment analysis code.
b) Vacuum breakers open before completion of Transient.
c) Initial humidity assumed to be greater than zero (various values between 1% RH at 15 psig and 16% RH at 60 psig were assumed).

These deviations have been taken only for calculating the high pressure/high temperature segment of the curve (the horizontal segment at 433°F). The low pressure segment of the curve (between 3 psig and 8 psig) has been calculated following the EPG Appendix C method without deviation.

The above deviations for the proposed curve were taken for the following reasons:

a) Use of the GOTHIC Containment Analysis code:

The EPG Appendix C method for calculating the high pressure segment of the DSIL is based on a set of tables presented in Appendix C from which plant specific values can be excerpted or interpolated. The high pressure segment is obtained by drawing a horizontal line at the end of the segment determined from the tables. This method provides a conservative DSIL and was adopted in light of the "difficulty" in defining the region to the right of point A' and at temperatures above point A in the generic DSIL curve in the EPG Appendix C. The use of the GOTHIC code provides a means of overcoming this difficulty and provides a sophisticated and realistic analysis that removes the unnecessary and extreme conservatism introduced in the Appendix C method. GOTHIC is a general purpose thermal-hydraulics computer program for analysis of nuclear power plant containments and other confinement buildings. It has been extensively verified against experimental results and other thermal-hydraulic codes.

b) Vacuum Breakers opening before completion of the Transient:

The Appendix C method assumes that the vacuum breakers remain closed for the entire duration of the transient irrespective of the fact that the drywell-below-wetwell differential pressure is much greater than the magnitude required to cause the vacuum breakers to open. The EPG Appendix C bases for this segment of the DSIL is that the drywell-to-wetwell differential pressure remain below the structural capacity of the diaphragm floor between the drywell and wetwell. For WNP-2 this value is 6.4 psid (wetwell pressure above drywell pressure). At WNP-2 the vacuum breakers are designed to open at a differential pressure of 0.2 psid. The analysis revealed that the magnitude of the differential pressure is greater than 0.2 psig within 1.5 seconds after initiation of the drywell spray. Therefore, the Appendix C methodology is extremely conservative in this regard. In the analysis the vacuum breakers were assumed to open at a differential pressure greater than 0.5 psid (drywell below wetwell).

To provide further margin two vacuum breakers out of the nine drywell-to-wetwell vacuum breakers were assumed to have failed to open. Technical Specifications (section 3.6.4.1) permit operation with two failed vacuum breakers (provided all nine are closed). In addition a forced delay of one second was imposed on the opening of the vacuum breakers in the GOTHIC simulations.

c) Initial humidity assumptions:

The EPG Appendix C method assumes that the humidity in the drywell is "0" irrespective of the pressure-temperature conditions and that the contents of the drywell are solely dry nitrogen. This assumption is justified only in that it is conservative. Since the maximum mass of nitrogen in the containment is limited, analysis indicates that the high pressure regions of the DSIL cannot subsist without additional mass in the containment. This additional mass would only be provided by steam. Thus, especially in the high pressure regions (say above 25 psig), a certain amount of humidity is bound to exist. Even if this steam is superheated the GOTHIC code not only reads the specified initial humidity as an equivalent mass of steam, it also calculates and allows for the superheat level. Thus the results obtained are realistic and reasonable. At lower pressures (below 25 psig) only marginal amounts of humidity (up to 2% RH) are assumed. This is justified on the basis that it is realistic.

O.7 Impact on BWROG EPG Strategy

Neither the deviation taken for the present WNP-2 DSIL Curve nor that to be taken for the proposed WNP-2 DSIL Curve has any adverse impact on the BWROG EPG strategy. The DSIL curve is in place in the WNP-2 EOPs and is referenced and used exactly as described in the BWROG Guidelines.

O.8 Safety Significance

The basis for the DSIL stated in Appendix A to the EPG has been maintained in developing both the present and the proposed WNP-2 DSIL, i. e., initiation of drywell spray will be permitted only when drywell pressure-temperature conditions are such that any rapid pressure drop due to evaporative cooling will not result in a challenge to the integrity of the containment. By expanding the useable region of the DSIL curve for drywell sprays without violating the basis for the curve, the functionality of the drywell sprays has been improved. By allowing the use of the sprays in this additional region of the pressure-temperature map, some LOCA heating scenarios can be mitigated to a greater extent than would otherwise have been possible. No adverse safety consequences have been identified as a result of this deviation.

II. STRATEGY DEVIATIONS

A. STRATEGY DEVIATION #1

(NRC Inspection Report, Attachment A, Item 1 and Attachment C)

A.1 Description of Deviation

In the event the non-seismic CSTs, which are designated as the preferred RCIC suction source, are lost during use of the RCIC system, continued RCIC operation with suction from the suppression pool would be allowed. Caution for high turbine lube oil and bearing temperatures is also included to alert the operator to the potential for these conditions when suction is from the suppression pool.

BWROG EPG Steps:	RC/L-2, RC/P-2, C5-3 and C5-3.2 (C6-2)*
WNP-2 PSTG Steps:	Caution #2, RC/L-2, RC/P-2, C5-3 and C5-3.2 (C6-2)*

A.2 August 28, NRC Meeting Response

The NRC stated this was an example of where additional data could have prevented this from becoming a concern by the NRC. Early documentation did not define the sources and later documentation did not define the cases for which CST is acceptable (i.e., we referenced three places where the deviation applied; it should have been addressed at these locations).

A.3 WNP-2 Position

WNP-2 will maintain this previously approved BWROG deviation in Phase II EOP upgrade.

A.4 Reason For The Deviation

Due to the non-seismic design of the CST's and the associated suction piping, WNP-2's RCIC may not be available for all the conditions assumed or intended by the generic guidance. Preferentially allowing RCIC to take suction from the suppression pool upon loss of CST suction would increase the availability of the RCIC system for those events where suppression pool temperature and level may restrict RCIC system operation.

*RCIC suction will always be from the CST for step C6-2 if the CST is available. RCIC suction from suppression pool would only be allowed in step C6-2 if CST is not available.

A.5 Technical Basis

WNP-2 will preferentially align the RCIC to the CSTs whenever they are available. However, because the tanks and the suction piping from these tanks to the RCIC system are not designed for an SSE they may not be available during seismic events. (Reference FSAR sections 3.8.4.1.7, 5.4.6.2.1.1 and 9.2.6.3.) Upon loss of the CSTs, the RCIC suction will automatically transfer to the suppression pool. The transfer control logic and valving are powered by plant 1E batteries independent of AC power sources (i.e., RCIC system operation is totally powered from battery backed sources and will operate under SBO conditions). If this occurs, WNP-2 has elected to allow the continued use of the RCIC system and will not terminate its use. To alert the operators to temperature concerns related to the use of RCIC with suction from the suppression pool, Caution #2 has been added to the list of cautions and referenced at the applicable EOP steps.

Finally, WNP-2 is consistent with the current BWROG EPG Committee position on this issue. Approved EPG issue number 8905 preferentially recommends RCIC suction from CSTs, if available, but allows suction from the suppression pool. When suction is from the suppression pool, the BWROG has added a caution on observing temperature limitations on the RCIC pump.

A.6 Impact on BWROG EPG Strategy

No impact - WNP-2 strategy is consistent with current BWROG position; reference approved EPG issue number 8905.

The BWROG EPG strategy (reference Appendix B of the BWROG EPGs OEI document 8390-4B page B-6-27) directs that suction for RCIC always be aligned to the condensate storage tank (CST). The automatic suction transfer from high suppression pool water level logic must be defeated when necessary, because the CST water is of higher quality and is not subject to the temperature increase that exist for the suppression pool.

WNP-2 maintains this strategy to the extent allowed by its plant unique design. Allowing the continued use of RCIC with suppression pool suction in the event the CSTs are unavailable is an accommodation of the non-seismic CST design at WNP-2. Continued RCIC use with suction from the suppression pool does not reduce the effectiveness of the EPG strategy. As noted above, WNP-2 operators will preferentially align to the CSTs due to the likelihood that the CSTs will be of a higher water quality and at a lower water temperature.

A.7 Safety Significance

Allowing the use of RCIC with suction from the suppression pool is viewed as an extension of the original strategy because RCIC would continue to be available for reactor vessel makeup in the event CST suction is unavailable. Recent approval of EPG issue 8905, which allows suppression pool suction for RCIC, supports this position. Finally, WNP-2 maintains its suppression pool at or near CST water quality and the significant heat capacity of the WNP-2 suppression pool should insure continued availability of the RCIC system for the majority of credible plant events. In fact, under some conditions such as station blackout, RCIC suction from the suppression pool may improve RCIC reliability. Under these conditions, RCIC suction from the suppression pool would prevent an increase in suppression pool level thereby minimizing the potential for increased RCIC turbine back pressure and inadvertent turbine trip and loss of the RCIC system.

B. STRATEGY DEVIATION #2

B.1 Description of Deviation

(NRC Inspection Report, Attachment A, Item 3)

RPV cooldown is not initiated until the reactor is shut down and will remain so with rods or boron.

BWROG EPG Steps:	Override following steps RC/P-2, RC/P-3, RC/P-5, C2-2 and RC/Q-1.
WNP-2 PSTG Step:	Override following steps RC/P-2, RC/P-3, RC/P-5, C2-2 and RC/Q-1.

B.2 This deviation was withdrawn for the Phase II EOP upgrade.

C. STRATEGY DEVIATION #3
(NRC Inspection Report, Attachment C)

C.1 Description of Deviation

WNP-2 designates purging of the primary containment with nitrogen instead of with nitrogen or air when a flammable mixture of H_2 and O_2 exists in primary containment.

BWROG EPG Step: PC/H-4.3

WNP-2 PSTG Step: PC/H-3.3

C.2 August 28, NRC Meeting Response

The NRC had no adverse comments on the WNP-2 basis for this deviation, but did voice concern about WNP-2 removing an option from the EPG strategy; i.e., why not put it in "just-in-case". WNP-2 responded that we could write an emergency support procedure (pre-planned) to accomplish this action and place it in the TSC to provide direction to implement if the situation was appropriate. This seemed agreeable to the NRC; but the NRC also stated that if we never see this strategy as being effective, then even this activity may be unnecessary. Rather justification should be developed to back up the existing position.

C.3 WNP-2 Position

WNP-2 intends to maintain this deviation for EOP Phase II implementation, but has developed a procedure so an air purge of containment can be directed if deemed appropriate. This additional procedure ensures that this accident mitigation strategy remains available to the plant even though it may be of limited benefit.

C.4 Reason For The Deviation

The normal method for combustible gas control at WNP-2, as described in the FSAR (see sections 6.2.5, 6.2.1.1.8.3 and 15.6.5.5.1.2) is based on recombination of hydrogen by use of the redundant 100% capacity recombiners in the containment atmosphere control (CAC) system and control of oxygen concentrations in the inerted containment atmosphere. These recombiners, which are sized to reverse the hydrogen concentration buildup in design basis accidents before reaching combustible levels will be the first method of combustible gas control employed.

In the event the two 100% CAC systems are unavailable or unable to control the combustible gas buildup, WNP-2 will utilize its installed nitrogen inerting system to purge containment. The capacity of this installed system is over one million standard cubic feet and is designed to deliver nitrogen at pressures up to and beyond the ultimate containment rupture point (~ 130 psi) even under loss of offsite power conditions. Use of the available nitrogen sources for purging would not introduce additional oxygen into the containment as would purging with air. Even if the containment were deinerted, adding nitrogen would be preferable to adding air, as it would both dilute the hydrogen and reduce the severity of any deflagration that could occur.

Finally, the WNP-2 reactor building HVAC fans that could be used for an air purge have a maximum discharge pressure of 0.5 psi. Because accidents at WNP-2 that could generate significant quantities of combustible gases will also pressurize primary containment above 0.5 psi, use of the air purge fans is believed to be of limited use.

The WNP-2 air purge fans are also electrically shed in the event of an accident and cannot be restored unless offsite power is available. The nitrogen purge system remains available in post-accident situations. Therefore, designation and preferential use of the nitrogen purge in the WNP-2 EOPs adequately cover the anticipated span of design basis and severe accidents. Should the nitrogen sources not be available, or should other emergency conditions warrant different actions, the decision to purge the containment with air could be made by the emergency organization at the time.

C.5 Technical Basis

WNP-2 FSAR sections 6.2.5, 6.2.1.1.8.3, 9.4.11.3 and 15.6.5.5.1.2

WNP-2 SER section 9.4

Regulatory Guide 1.7, Rev. 1

10 CFR 50 Appendix A, General Design Criteria 41, 42 and 43

NRC Questions 022 series, 281.009, 312.016 and 423.041

Burns & Roe Calculation 5.34.10

C.6 Impact on BWROG EPG Strategy

The BWROG EPG strategy to purge containment to reduce the concentration of hydrogen below flammable limits is implemented at WNP-2. The strategy has been changed only in that the air purge system will be used with Plant Emergency Director concurrence. If nitrogen is not available, and it is possible to lower containment pressure below 0.5 psig and all required support systems are available or recoverable, air purge can be directed by the PED.

C.7 Safety Significance

No adverse safety significance is involved in implementing this deviation because the objective of purging and venting is met by preferentially using a nitrogen source. This action is not inconsistent with the EPG strategy and if successful, results in dilution of hydrogen in containment using nitrogen to diminish the effects of any deflagration. At WNP-2, the nitrogen purge, unlike the air purge option, is available for containment pressures greater than 0.5 psi and for loss of offsite power events.

D. STRATEGY DEVIATION #4

D.1 Description of Deviation

When isolating primary systems that are discharging into a secondary containment area or outside the plant, the BWROG Rev. 4 guidelines exclude all systems required to shut down the reactor, assure adequate core cooling, or suppress a fire. In keeping with the latest BWROG EPG Committee position, WNP-2 will also exclude systems required to vent the containment in this step.

BWROG EPG Steps:	SC/T-3, SC/R-1, SC/L-1 and RR-1
WNP-2 PSTG Steps:	SC/T-2, SC/R-1, SC/L-1 and RR-1

D.2 August 28, NRC Meeting Response

No adverse comments.

D.3 WNP-2 Position

WNP-2 will maintain this previously approved BWROG deviation in Phase II EOP upgrade.

D.4 Reason For The Deviation

By requiring the isolation of only those systems not required to assure adequate core cooling, regardless of their current effect on the secondary containment, the BWROG EPG has set the protection of the core ahead of secondary containment.

Appendix B of the BWROG EPGs (OEI document 8390-4B page B-7-71) states: "When a decision between the possible loss of adequate core cooling and a loss of primary containment integrity must be made, the EPGs preferentially choose to maintain primary containment integrity...." Therefore, it directly follows that the primary containment takes precedence over the secondary containment.

Thus, the primary containment vent path must be maintained even if a system required for venting is discharging into an area. Similarly, the change is applicable to Step RR-1 because the steps necessary to protect primary containment integrity already specify that the venting is to take place "irrespective of the offsite radioactivity release rate".

D.5 Technical Basis

This issue resulted from questions raised by the NRC about isolating a PC vent because it is the source of high radiation/temperature in the secondary containment. The issue was resolved by adding PC vents to the criteria for systems not to isolate; reference BWROG issue number 8902.

D.6 Impact on BWROG EPG Strategy

This deviation is a direct result of applying the EOP strategy and underlying philosophy to these steps. This issue has been discussed and the position taken by WNP-2 is in line with the approved BWROG position as of June 1, 1989; reference approved BWROG EPG issue number 8902.

D.7 Safety Significance

This deviation correctly prioritizes primary containment over secondary containment consistent with EPG intent. The WNP-2 position is in compliance with the latest BWROG resolution.

E. STRATEGY DEVIATION #5

E.1 Description of Deviation

The same guidance given in the BWROG EPG for restart of the turbine building HVAC system is also given in the WNP-2 PSTG for restart of the radwaste building HVAC system.

BWROG EPG Step: None

WNP-2 PSTG Step: Override prior to step RR-1

E.2 August 28, Meeting Response

No adverse comments.

E.3 WNP-2 Position

WNP-2 will maintain this previously approved BWROG deviation in Phase II EOP upgrade.

E.4 Reason For The Deviation

The EPGs do not direct restart of the radwaste building HVAC system. However, at WNP-2, there are potential release paths that terminate in the radwaste building (such as the RWCU, EDR and FDR systems), and personnel access to this building (which houses the main and radwaste control rooms) is also desirable. Therefore, for the same reason as listed in Appendix B of the BWROG EPGs (OEI document 8390-4B page B-9-8) the WNP-2 strategy also instructs the control room operators to restart the radwaste building HVAC system.

E.5 Technical Basis

This deviation is taken to ensure any radioactive releases is both monitored and elevated. Also, it improves personnel access to and habitability of the WNP-2 radwaste building.

E.6 Impact on BWROG EPG Strategy

There is no adverse impact from this action on the overall EPG strategy. This is an additional precautionary step added to improve personnel access to the radwaste building, and while not absolutely essential to the safe operation of WNP-2, it is in accordance with ALARA principles. No negative impact on electrical power sources nor supplies is involved. No change in overall strategy endpoint results from implementation of this deviation.

This deviation strategy supports EPG intent. Restart of "other" HVAC was considered by the BWROG in 1984 - 1985 when the Emergency Procedure Committee addressed the MSIV Leakage Control Committee's report on suggested EPG actions. EPG strategy did not address any building other than the turbine building because it was certain that all BWR's have a turbine building. Other ventilated buildings may exist but their accessibility to perform EOP actions was believed to be too plant specific to identify in a generic guideline. Resolution of EPG issue #53 contains the following quote concerning "other" building HVAC restart: "If a utility believes ventilation systems in other areas fall into the same category as turbine building HVAC, they too could be included in this step."

E.7 Safety Significance

There is no adverse safety significance associated with implementing this deviation. This is merely an added step that will not adversely affect any other mitigating action or equipment, and insures that any release from the radwaste building is elevated and monitored.

F. STRATEGY DEVIATION #6
(NRC Inspection Report, Attachment A, Item 2 and Attachment C)

F.1 Description of Deviation

Under conditions where no injection systems, injection subsystems or alternate injection systems are available, WNP-2 will not execute the generic EPG low pressure override (OR/6), which results in early termination of steam cooling. WNP-2 will continue in steam cooling, irrespective of reactor pressure until either any injection system becomes available or the RPV level drops to the minimum zero injection water level.

BWROG EPG Step: C1-3

WNP-2 PSTG Step: C1-3

F.2 This deviation was withdrawn for the Phase II EOP upgrade.

G. STRATEGY DEVIATION #7
(NRC Inspection Report, Attachment A, Item 5)

G.1 Description of Deviation

RPV head vents are not used as an alternate depressurization system for the RPV depressurizing.

BWROG EPG Step: C2-1.4

WNP-2 PSTG Step: C2-1.3

G.2 This deviation was withdrawn for the Phase II EOP upgrade.

H. STRATEGY DEVIATION #8
(NRC Inspection Report, Attachment C)

H.1 Description of Deviation

WNP-2 EOPs have included additional conditional criteria for determining if RPV water level should be lowered during an ATWS. These additional criteria require the operator to confirm that one or more SLC pumps are not running or that reactor power is not decreasing prior to initiating action to intentionally reduce RPV water level.

BWROG EPG Step: C5-2

WNP-2 PSTG Step: C5-2

H.2 This deviation was withdrawn for the Phase II EOP upgrade.

I. STRATEGY DEVIATION #9

I.1 Description of Deviation

RPV venting is secured at 192" (minimum steam cooling water level) instead of 161" (TAF) during primary containment flooding.

BWROG EPG Step: C6-3

WNP-2 PSTG Step: C6-3

I.2 This deviation was withdrawn for the Phase II EOP upgrade.

III. IMPLEMENTATION DEVIATIONS

A. IMPLEMENTATION DEVIATION #2

A.1 Description of Deviation

Caution #1, reactor building instrument line maximum run temperature and RPV saturation limit near reactor building instrument line runs implemented via abnormal condition procedures.

BWROG EPG Steps: Caution #1 and C4-4

WNP-2 PSTG Steps: Caution #1 and C4-4

A.2 August 28, NRC Meeting Response

The NRC asked if the abnormal procedures were reviewed and verified as emergency support procedures. The Supply System said "yes". The NRC asked if WNP-2 had completed review of all events that could cause a high temperature in the reactor building. The Supply System said "yes".

A.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

A.4 Reason For The Deviation

No instrumentation exists at WNP-2 to specifically monitor the temperature near individual instrument runs in the reactor building. To implement Caution #1 for temperature concerns in the reactor building two abnormal procedures were written. These abnormal procedures allow WNP-2 to implement the intent of the EPG Caution #1.

B. IMPLEMENTATION DEVIATION #4
(NRC Inspection Report, Attachment C)

B.1 Description of Deviation

In Caution #1, drywell temperature (average), not drywell temperature near the instrument runs is specified.

BWROG EPG Step: Caution #1

WNP-2 PSTG Step: Caution #1

B.2 August 28, NRC Meeting Response

The NRC noted that WNP-2 uses average drywell temperature that was specifically excluded by the EPG. The NRC asked if WNP-2 had added margin to our calculations to account for the use of average drywell temperature. WNP-2 said that we would review the calculations and determine if we had added margin. The NRC stated that they want WNP-2 to justify the average drywell temperature as a conservative temperature if WNP-2 did not add margin to the calculations. The NRC asked us if other utilities had used average drywell temperature and WNP-2 stated that we had not asked other utilities.

B.3 WNP-2 Position

WNP-2 will maintain this deviation Phase II EOP upgrade.

B.4 Reason For The Deviation

No instrumentation exists at WNP-2 to specifically monitor the temperature near individual instrument runs in the drywell. To implement Caution #1, the best option available is to use the average drywell temperature. This is consistent with the way this caution has been implemented in most domestic BWRs.

C. IMPLEMENTATION DEVIATION #9

C.1 Description of Deviation

To prevent loss of an operating reactor feed pump during an ATWS when the main turbine is not on-line, WNP-2 directs recirculation flow runback before recirculation pump trip.

BWROG EPG Step: RC/Q-3

WNP-2 PSTG Step: RC/Q-3

C.2 August 28, NRC Meeting Response

There was no NRC discussion on this deviation.

C.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

C.4 Reason For The Deviation

The purpose of Step RC/Q-3 in the generic guidance is to prevent the loss of an on-line main turbine when the recirculation pumps are tripped in the subsequent step. Appendix B of the BWROG EPGs (OEI document 8390-4B page B-6-105) states: "...if the pump trip is initiated from a high power level the resulting plant transient may cause a turbine trip due to rapid changes in steam flow, RPV pressure, and RPV water level." Simulator training at WNP-2 has shown similar problems occur with our steam driven reactor feedpumps when the main turbine is not on-line.

If the turbine is not on-line but a reactor feedpump is providing makeup to the RPV, a recirculation pump trip from high power causes feedpump trip when the RPV level goes high. This preventable loss of the high head, high flow reactor feedwater pumps greatly complicates recovery actions during the ATWS. As with the turbine trip problem in the BWROG Guidelines, the loss of a reactor feedpump at WNP-2 can be avoided if the recirculation system is run back before the recirculation pumps are tripped.

Thus, WNP-2 performs Step RC/Q-3 if the turbine is on-line or if a reactor feedpump is operating. For WNP-2 this provides a significant improvement in RPV level control during ATWS events while accomplishing the EPG objective of reducing power level without causing the loss of the only RPV injection system capable of maintaining RPV level during a high power ATWS with the reactor at pressure.

D. IMPLEMENTING DEVIATION #13

(NRC Inspection Report, Attachment C)

D.1 Description of Deviation

Suppression pool spray initiation limit is at top of suppression pool level instrument range (51') vice elevation of suppression pool spray nozzles (53').

BWROG EPG Steps:	PC/P-1, PC/H-4.1 and PC/H-5.1
WNP-2 PSTG Steps:	PC/P-1, PC/H-3.1 and PC/H-4.1

D.2 August 28, NRC Meeting Response

The NRC requested that WNP-2 evaluate the safety significance of the difference of taking spray action at 51' versus 53'. The NRC requested the deviation justification to include an assessment of the impact of this deviation to EPG strategy; i.e., what is being lost? The Supply System responded that this will be considered during the upgrading of the deviation documentation.

D.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

D.4 Reason For The Deviation

WNP-2 implemented this deviation since suppression pool level instrumentation stops at 51' elevation. The BWROG recommends action at suppression pool spray nozzles (53' elevation). It is improper to credit operator action at a level beyond available instruction.

E. IMPLEMENTATION DEVIATION #14
(NRC Inspection Report, Attachment C)

E.1 Description of Deviation

Drywell spray initiation limit at top of suppression pool level instrument range (51') versus "Elevation of bottom of internal suppression chamber to drywell vacuum breakers less vacuum breaker opening pressure in feet of water."

BWROG EPG Steps:	PC/P-2, SP/L-3.2, PC/H-4.4 and PC/H-5.2
WNP-2 PSTG Steps:	PC/P-2, SP/L-3.2, PC/H-3.4 and PC/H-4.2

E.2 August 28, NRC Meeting Response

Same as Implementation Deviation #13.

E.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

E.4 Reason For The Deviation

WNP-2 implemented this deviation since suppression pool level instrumentation stops at an elevation below the bottom of internal suppression chamber to drywell vacuum breakers. It is improper to credit operator action at a level beyond available instrumentation. WNP-2 action is at an elevation ~2'-3' below EPG recommendation.

F. IMPLEMENTATION DEVIATION #15

F.1 Description of Deviation

Sampling of suppression pool water prior to its discharge is only specified "if core damage is suspected".

BWROG EPG Step: SP/L-1

WNP-2 PSTG Step: SP/L-1

F.2 August 28, NRC Meeting Response

The NRC asked how WNP-2 determined if "core damage is suspected". WNP-2 responded that core damage is suspected if the core is uncovered due to low RPV water level, high hydrogen monitor readings, high LOCA-radiation response in drywell, or power oscillations have occurred. The NRC asked WNP-2 to better document its deviation justification position.

F.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

F.4 Reason For The Deviation

WNP-2 has a very high water quality suppression pool such that sampling prior to drainage is not necessary unless a contamination source is introduced (i.e. core damage). The conditions that result in core damage (e.g. low RPV level) are symptomatically recognizable. It is reasonable to assume that core damage is not suspected unless such a condition occurs. Therefore, a mandate that the suppression pool be sampled is not given, and allowance is given for judgement on the part of the operator before unnecessarily applying the restriction of suppression pool sampling. This meets EPG intent by alerting the operator to the potential need to sample the suppression pool prior to discharge.

G. IMPLEMENTATION DEVIATION #16

G.1 Description of Deviation

SPMS step not applied. WNP-2 does not have an SPMS.

BWROG EPG Steps: SP/L-1 and C6-1

WNP-2 PSTG Steps: SP/L-1 and C6-1

G.2 August 28, NRC Meeting Response

The NRC stated that the WNP-2 deviation justification is inadequate as it implies no makeup is available. Rather than just say "WNP-2 does not have a suppression pool makeup system (SPMS)", WNP-2 must identify the system that is used to accomplish this function

G.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

G.4 Reason For The Deviation

Suppression pool makeup system (SPMS) is a unique feature of a BWR Mark III containment system that is not applicable for BWR Mark II containment emergency procedures. SPMS function is to ensure sufficient heat capacity for long-term decay heat removal for Mark III containments. This function is met at WNP-2 without any suppression pool makeup post accident.

H. IMPLEMENTATION DEVIATION #18
(NRC Inspection Report, Attachment C)

H.1 Description of Deviation

Wetwell vent initiation limit at top of the suppression pool level instrument range (51') vice elevation of wetwell vent line (which is above the instrument range).

BWROG EPG Step: PC/H-4.2

WNP-2 PSTG Step: PC/H-3.2

H.2 August 28, NRC Meeting Response

Same as Implementation Deviation #13

H.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

H.4 Reason For The Deviation

WNP-2 implemented this deviation since suppression pool level instrumentation stops at an elevation below the wetwell vent line. It is improper to credit operator action at a level beyond available instrumentation. WNP-2 action is at an elevation ~2'-3' below EPG recommendation.

I. IMPLEMENTATION DEVIATION #19
(NRC Inspection Report, Attachment C)

I.1 Description of Deviation

Guidance to operate secondary containment HVAC if radiation level clears is not given.

BWROG EPG Step: SC/T-2

WNP-2 PSTG Step: None

I.2 August 28, NRC Meeting Response

The NRC asked about the case for which the HVAC system is not operating. The Supply System indicated the same question had been raised during procedure review; a response would need to be provided later.

I.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade. Any reactor building pressure problem would be addressed by annunciator alarms and associated response procedures such as reactor building ventilation failure, PPM 4.10.1.1. The plant does not operate nor combat problems on emergency procedures alone. Operator crew performance coupled with training has shown appropriate response with this deviation, but the deviation will be evaluated to ensure concise guidance is given.

I.4 Reason For The Deviation

The guidance to "operate secondary containment HVAC if the Z signal clears" duplicates the EPG action specified in the overrides at the beginning of the secondary containment control. This deviation was taken for human factors reasons. When executing the procedures, it was confusing to come to guidance which was already in effect.

J. IMPLEMENTATION DEVIATION #23

(NRC Inspection Report, Attachment C, Strategy Deviation #8)

J.1 Description of Deviation

Specific direction to override ECCS valve logic is given to implement EPG strategy for throttling RPV injection.

BWROG EPG Step: C4-1.3, C4-3.2, C5-2 and C5-3.2

WNP-2 PSTG Step: C4-1.3, C4-3.2, C5-2 and C5-3.2

J.2 This deviation was withdrawn for the Phase II EOP upgrade.

K. IMPLEMENTATION DEVIATION #26
(NRC Inspection Report, Attachment A Item 7 and Attachment C)

K.1 Description of Deviation

Multiple RPV level instruments are specified when action is being taken to exit RPV flooding contingency by draining water out of the reactor vessel.

BWROG EPG Step: C4-4

WNP-2 PSTG Step: C4-4

K.2 August 28, NRC Meeting Response

The NRC asked why WNP-2 should use two RPV level instruments when EPG just uses one. WNP-2 responded that in all other situations in EPGs, an operator takes conservative action by responding to only one RPV level instrument. WNP-2 maintains it is more conservative action to stay flooded than to exit RPV flooding based on one RPV level instrument. The NRC understood the issue, but stated Appendix B of the BWROG EPGs does allow for use of one instrument when it is trending. The NRC asked that WNP-2 provide better documentation in the deviation document and address the downside of using two instruments.

K.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

K.4 Reason For The Deviation

At the end of the RPV flooding contingency, direction is given to terminate all injection into the RPV and reduce RPV water level when RPV pressure has remained at least 60 psig (Minimum RPV Flooding Pressure) above wetwell for at least the Minimum Core Flooding Interval and when multiple RPV water level instruments are available. The decision to drain the RPV down is contingent upon the ability to determine that water level instrumentation is available. This action is especially critical because the BWROG EPG is directing the operator to move from a configuration that is known to be safe (flooded RPV), to a less safe configuration (lowering RPV level).

In addition, one of the entry conditions to this contingency is the inability to determine RPV level. For these reasons, WNP-2 trains their operators that "restoration of RPV level indication is achieved when a consistent change in an RPV water level instrument reading is observed or a trend between RPV water level instruments is established". As was learned in the TMI accident, dependence on a single instrument for critical parameters can cause wrong actions to be performed. Thus, WNP-2 has inserted the word "multiple" in the RPV water level instrument availability permissive as a reminder that the best way to determine whether an RPV level instrument is available is to observe a trend between two or more instruments.

The only impact of this deviation is the possibility that the vessel may remain in a fully flooded state for a longer period of time.

L. IMPLEMENTATION DEVIATION #28
(NRC Inspection Report, Attachment A, Item 5 and Attachment C

L.1 Description of Deviation

WNP-2 restricts the RPV vent path during containment flooding to a main steam line, defeating MSIV isolation interlocks if necessary.

BWROG EPG Step: C6-2

WNP-2 PSTG Step: C6-2

L.2 This deviation was withdrawn for the Phase II EOP upgrade.

M. IMPLEMENTATION DEVIATION #29

M.1 Description of Deviation

Defeating "Main Steam Line" isolation interlocks is specified for venting during primary containment flooding.

BWROG EPG Step: C6-2

WNP-2 PSTG Step: C6-2

M.2 This deviation was withdrawn for the Phase II EOP upgrade.

N. IMPLEMENTATION DEVIATION #32

(NRC Inspection Report, Attachment C

N.1 Description of Deviation

The WNP-2 calculation to determine the PCPL is based on the pressure at which PC vent valves will open, rather than the pressure at which they will open and close.

BWROG EPG Appendix C Worksheet:	WS-9
WNP-2 Calculation:	NE-02-89-27

N.2 August 28, NRC Meeting Response

The NRC stated a concern that due to this deviation, the PC vent valves may be damaged when WNP-2 tries to close these valves at higher PC pressures and thus the capability to close the valves and isolate containment may be lost. The NRC requested WNP-2 to evaluate impact of continuing to vent PC down to the pressure where PC vent valves can be closed. The current value is based on vendor recommendations. The NRC indicated that WNP-2 should either pursue continuing to vent to lower PC pressures or provide justification that the PC vent valves will not be damaged if closed at PC pressures higher than vendor recommendations. WNP-2 agreed to evaluate and provide better justification.

N.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

N.4 Reason For The Deviation

To initiate venting based on valve closure pressure may result in premature and unnecessary releases to the environment. Defining PCPL by other parameters may alleviate the need to vent. If venting were required, this deviation would tend to minimize the duration of the release.

O. IMPLEMENTATION DEVIATION #35

O.1 Description of Deviation

WNP-2 adds specific direction to bypass the high steam tunnel temperature isolation interlock to prevent closure of an open MSIV to allow implementation of the EPG strategy to lower RPV level when the primary containment is being heated up during an ATWS.

BWROG EPG Step: C5-2

WNP-2 PSTG Step: C5-2

O.2 August 28, NRC Meeting Response

NRC stated that overriding this interlock is specifically excluded by EPGs. WNP-2 responded that this deviation is required to meet EPG strategy intent, and that it is a specific design issue for WNP-2. Verbatim compliance in this instance would actually prevent compliance with EPG strategy. WNP-2 noted that this is an open item with the BWROG. The Supply System stated that additional information on the justification would be provided.

O.3 WNP-2 Position

NRC position that overriding the main steam high temperature isolation interlock is specifically excluded by EPGs is correct. However at WNP-2, RPV low level signal (-50") will shed cooling in the main steam tunnel and eventually result in MSIV closure on high tunnel temperature (loss of main condenser as a heat sink). Closure of MSIVs is counter to the EPG strategy for depositing energy outside of primary containment. WNP-2 will maintain this deviation in Phase II EOP upgrade.

O.4 Reason For The Deviation

At WNP-2, main steam tunnel cooling fans lose power (are load shed) on an F (high drywell pressure) or an A (low RPV water level) signal. Thus, when the RPV water level is lowered to reduce power, steam tunnel cooling will be lost. The BWROG EPG specifies that the low RPV water level isolation interlock for the MSIVs be bypassed to prevent loss of the main condenser when it is most desirable to maintain this heat sink. Simulator experience at WNP-2 shows that only minutes after low RPV water level (A signal) is reached the MSIVs shut on high main steam tunnel temperature. Therefore, for WNP-2 to meet the intent of this BWROG EPG step, the main steam high temperature isolation interlock must be overridden.

P. IMPLEMENTATION DEVIATION #36

P.1 Description of Deviation

WNP-2 has added the words "to determine no core damage exists" as an exclusion for allowing RWCU blowdown to clarify EPG intent.

BWROG EPG Step: RC/P-2

WNP-2 PSTG Step: RC/P-2

P.2 August 28, NRC Meeting Response

There was no NRC discussion of this deviation.

P.3 WNP-2 Position

WNP-2 will maintain this deviation in Phase II EOP upgrade.

P.4 Reason For The Deviation

In this step, the operator is directed to control RPV pressure below the lowest SRV setpoint and is given a list of possible systems to use to accomplish this task. One of the systems listed is the RWCU system. If no boron has been injected into the RPV, RWCU is used in the blowdown mode to provide a depressurization path for the RPV. Appendix B of the BWROG EPGs (OEI document 8390-4B page B-6-82) states with regard to RWCU blowdown: "Reactor coolant must be sampled and analyzed for activity as prescribed by existing plant sampling procedures. Failure to determine coolant activity might result in discharge of radioactivity to the environment beyond allowable limits." WNP-2 has added the words "to determine no core damage exists" to specify the type and purpose of the sampling the operator is directed to perform. These words only serve to more clearly specify the intent or strategy of the emergency operating procedures.