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November 15, 2010

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BELL BEND NUCLEAR POWER PLANT
BBNPP PLOT PLAN CHANGE COLA
SUPPLEMENT, PART 3 (ER); SECTION 7.3
BNP-2010-298 Docket No. 52-039

References: 1) BNP-2010-117, T. L. Harpster (PPL Bell Bend, LLC) to U.S. NRC, "May 2010 BBNPP Schedule Update", dated May 7, 2010

2) BNP-2010-246, R. R. Sgarro (PPL Bell Bend, LLC) to U.S. NRC, "BBNPP Plot Plan Change Supplement Schedule Update," dated September 28, 2010

3) BNP-2010-277, R. R. Sgarro (PPL Bell Bend, LLC) to U.S. NRC, "BBNPP Plot Plan Change COLA Supplement, PART 3 (ER); Section 7.3," dated October 28, 2010

The purpose of this letter is to correct the previous transmittal of Environmental Report (ER) Section 7.3 (Reference 3), in which PPL Bell Bend, LLC (PPL) inadvertently omitted Table 7.3-4. This transmittal incorporates this table and supersedes the Reference 3 transmittal in its entirety.

In Reference 1, PPL provided the NRC with schedule information related to the intended revision of the Bell Bend Nuclear Power Plant (BBNPP) footprint within the existing project boundary which has been characterized as the Plot Plan Change (PPC). As the NRC staff is aware, the plant footprint relocation will result in changes to the Combined License Application (COLA) and potentially to new and previously responded to Requests for Additional Information (RAIs). PPL declassified this docketed schedule information from regulatory commitment status in Reference 2, with an agreement to update the staff via weekly teleconferences as the project moves forward.

PPL has committed to provide the NRC with COLA supplements, consisting of revised COLA Sections and associated RAI responses/revisions, as they are developed. These COLA supplements will only include the changes related to that particular section of the COLA and will not include all conforming COLA changes. Conforming changes for each supplement necessary for other COLA sections will be integrated into the respective COLA supplements and provided in accordance with the schedule, unless the supplement has already been submitted. In the latter case, the COLA will be updated through the normal internal change process. The revised COLA supplements will also include all other approved changes since the submittal of Revision 2. All COLA supplements and other approved changes will ultimately be incorporated into the next full COLA revision.

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Enclosure 1 provides the revised BBNPP COLA Supplement, Part 3 (Environmental Report), Section 7.3, Revision 2a. The revised BBNPP COLA section supersedes previously submitted information in its entirety. No departures and/or exemptions to this BBNPP COLA section have been revised as a result of the PPC.

The only new regulatory commitment is to include the revised COLA section (Enclosure 1) in the next COLA revision. No new or revised RAI responses are included in this transmittal.

If you have any questions, please contact the undersigned at 570.802.8102.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on November 15, 2010

Respectfully,

Rocco R. Sgarro

RRS/kw

Enclosure: Revised BBNPP COLA Part 3 (ER); Section 7.3, Revision 2a cc: (w/o Enclosures)

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Enclosure

Revised BBNPP COLA Part 3 (ER); Section 7.3, Revision 2a

7.3 SEVERE ACCIDENT MITIGATION ALTERNATIVES

The purpose of the severe accident mitigation alternatives (SAMA) analysis is to review and evaluate both design and non-hardware (i.e., operation and maintenance programs) alternatives that could significantly reduce the radiological risk from a postulated severe accident by preventing core damage and significant releases from the containment. The U.S. EPR Design Certification Environmental Report (U.S. EPR DC ER) (AREVA, ~~2007a)~~2009) for the U.S. EPR design submitted by AREVA NP evaluated both design and non-hardware alternatives.

The primary focus of the U.S. EPR DC ER was the severe accident mitigation design alternatives (SAMDA). However, non-hardware alternatives were identified in the analysis and will be addressed when the plant design is finalized and processes and procedures are being developed for the U.S. EPR. The conclusions drawn in the U.S. EPR DC ER are applicable to BBNPP.

7.3.1 SAMDA Analysis Methodology

The methodology used to develop a comprehensive list of U.S. EPR SAMDA candidates, define the screening criteria used to categorize the SAMDA candidates, and the cost-benefit evaluation is summarized in this section based on the U.S. EPR DC ER (AREVA, ~~2007a)~~2009) for the U.S. EPR.

The comprehensive list of SAMDA candidates was developed for the U.S. EPR design by reviewing industry documents for generic PWR enhancements and considering plant-specific enhancements. The SAMDA candidates were defined as enhancements to the U.S. EPR plant that have the potential to prevent core damage and significant releases from the containment. The primary industry document supporting the development of U.S. EPR generic PWR SAMDA candidates was NEI 05-01 (NEI, 2005).

In addition to the generic SAMDA candidates, the results of the Level 1 and Level 2 PRA were reviewed to identify plant-specific modifications for inclusion in the comprehensive list of SAMDA Candidates.

The U.S. EPR top 100 ~~U.S. EPR Level 1 PRA~~ core damage frequency (CDF) cutsets were evaluated to identify ~~plant-specific~~ those modifications ~~for inclusion~~ that would reduce the likelihood of occurrence of the significant core damage sequences. As stated in the ~~comprehensive list~~ U.S. EPR FSAR Section 19.1.4.1.2.3 (Significant Cutsets and Sequences), ninety-five percent of ~~SAMDA candidates. The~~ the total CDF is represented by over 12,000 cutsets for the U.S. EPR design; however, the top 100 cutsets ~~represent~~ include all cutsets contributing >1 percent to the total CDF. For the U.S. EPR design, this equates to approximately 50 percent of the total ~~core damage frequency (CDF) for~~ CDF. In fact the ~~U.S. EPR. The~~ selection of the top 100 cutsets conservatively includes cutsets of low importance. For example, the percentage of the individual contribution to the total CDF for the ~~cutsets~~ 101st ~~below the top 100~~ cutset was ~~minimal. Therefore, these cutsets were not likely contributors for identification of cost beneficial enhancements for the U.S. EPR design.~~ 0.10 percent.

The U.S. EPR top 100 large release frequency (LRF) cutsets were evaluated to identify those modifications that would reduce the likelihood of occurrence of the significant containment challenges. This population of cutsets specifically excluded the contribution to LRF of core damage sequences due to Main Steam Line Break (MSLB) inside containment with main feedwater unisolated, as this sequence of events was determined not to lead to core damage or LRF. This exclusion ensures that the conservative treatment of an event does not artificially reduce the importance of other containment failure mechanisms. The top 100 LRF cutsets include all cutsets contributing greater than 1 percent to the total LRF. For the U.S. EPR design this equates to approximately 50 percent of the total LRF, and includes many low importance cutsets that individually contribute only 0.10 percent to the total LRF.

An extensive evaluation of the top 100 cutsets was completed in order to establish that all possible Consistent with current regulatory guidance and industry practice, the risk significant design alternatives for the U.S. EPR were addressed. design have been addressed by detailed evaluations of the top 100 CDF and LRF cutsets to identify plant-specific modifications for inclusion in the comprehensive list of U.S. EPR SAMDA candidates. Through evaluation of the evaluation, top 100 Level 1 PRA cutsets, numerous U.S. EPR specific operator actions and hardware-based SAMDA candidates were developed. When evaluating the top 100 LRF cutsets no additional SAMDA candidates were identified. The U.S. EPR DC ER (AREVA, 2007a)2009) provides a detailed list of the SAMDA candidates for the U.S. EPR. EPR design. The SAMDA candidates identified in the U.S. EPR DC ER are applicable to BBNPP.

The SAMDA candidates developed for the U.S. EPR design were qualitatively screened using seven categories. The intent of the screening is to identify the candidates for further risk-benefit calculation. For each SAMDA candidate, a screening criteria and basis for screening was identified to justify the implementation or exclusion of the SAMDA candidate in the U.S. EPR. EPR design. The seven categories used during the screening process included:

- Not applicable. The SAMDA candidates were identified to determine which are definitely not applicable to the U.S. EPR. EPR design. Potential enhancements that are not considered applicable to the U.S. EPR design are those developed for systems specifically associated with boiling water reactors (BWR) or with specific PWR equipment that is not in the U.S. EPR design.

- Already implemented. The SAMDA candidates were reviewed to ensure that the U.S. EPR design does not already include features recommended by a particular SAMDA candidate. Also, the intent of a particular SAMDA candidate may have been fulfilled by another design feature or modification. In these cases the SAMDA candidates are already implemented in the U.S. EPR plant design. If a SAMDA candidate has already been implemented at the plant, it is not retained.

- Combined. If one SAMDA candidate is similar to another SAMDA candidate, and can be combined with that candidate to develop a more comprehensive or plant-specific SAMDA candidate, only the combined SAMDA candidate is retained for screening.

- Excessive implementation cost. If a SAMDA candidate requires extensive changes that will obviously exceed the maximum benefit, even without an implementation cost estimate and therefore incurs an excessive implementation cost, it is not retained.

- Very low benefit. If a SAMDA candidate is related to a non-risk significant system for which change in reliability is known to have negligible impact on the risk profile, it is deemed to have a very low benefit and is not retained.

- Not required for design certification. Evaluation of any potential procedural or surveillance action SAMDA candidates are not appropriate until the plant design is finalized and the plant procedures are being developed. Therefore, if a SAMDA candidate is related to any of these enhancements, it is not retained for this analysis.

- Considered for further evaluation. If a particular SAMDA candidate was not categorized by any of the preceding categories, then the SAMDA candidate is considered for further evaluation and subject to a cost-benefit analysis.

The screening categories were chosen based on guidance from NEI 05-01. The U.S. EPR DC ER contains a detailed description of each of the categories. The screening categories are applicable to BBNPP.

The SAMDA candidates categorized as "Not required for design certification" in the AREVA NP Environmental Report Standard Design Certification were re-evaluated for BBNPP. These SAMDA candidates were re-evaluated using the screening methdology in AREVA NP Environmental Report Standard Design Certification. An additional screening category called "Not a design alternative" was used to capture any SAMDA candidate not related to plant design. This category included SAMDA candidates related to procedure modifications, training, or surveillance. If a SAMDA candidate is related to any of these enhancements, it is not retained for this analysis.

After the screening process was completed, the SAMDA candidates that were placed in the Considered for Further Evaluation category would require a cost-benefit evaluation. The cost-benefit evaluation of each SAMDA candidate would determine the cost of implementing the specific SAMDA candidate with the maximum averted cost risk from the implementation of the specific SAMDA candidate. The maximum averted cost risk, typically referred to as the maximum benefit, equates to the cost obtained by the elimination of all severe accident risk.

7.3.2 Severe Accident Cost Impact and Maximum Benefit for BBNPP

The severe accident impact is determined by summing the occupational exposure cost, on-site cost, public exposure, and off-site property damage. The methodologies provided in NEI 05-01 (NEI, 2005) and NUREG/BR-0184 (NRC, 1997) were used as guidance. The principal inputs to the calculations were the CDF, 2,000 dollars per person-rem (NRC, 1997), licensing period of 60 years, 7% best estimate discount rate (NEI, 2005), and 3% upper bound discount rate (NEI, 2005). The maximum benefit calculation performed in the U.S. EPR DC ER used the whole body dose and economic impact from U.S. EPR Level 3 PRA analysis, which was based on population data from 2000. The maximum benefit calculation for BBNPP uses the economic impact and whole body dose for a 2050 population (Table 7.3-1). The ~~best~~point estimate and ~~upper bound~~ mean value CDF with 2008 replacement power costs severe accident impact cost for BBNPP is also shown in Table 7.3-1.

The total cost impact of a severe accident (maximum benefit) must account for the risk contribution from internal initiating events, internal flooding, fire, and seismic. The total core damage frequency (CDF) at power for the U.S. EPR design includes the contribution from internal initiating events (55%), internal flooding (12%), and fire (33%) (AREVA, 2007b). A seismic ~~margins~~margin assessment instead of a seismic PRA was completed for the U.S. ~~EPR.~~ EPR design. The seismic ~~margins~~margin analysis yields valuable information regarding the ruggedness of the seismic design with respect to the potential severe accident (AREVA, 2007b). However, it does not result in the estimation of seismic CDF which is used to determine the cost impact of a severe accident in the SAMDA analysis. In order to account for the seismic contribution, it was assumed that the seismic risk is equivalent to the fire risk since the fire risk in the U.S. EPR PRA analysis was evaluated to be the highest external event risk at 33% of the total CDF.

Increasing the severe accident impact by 33 percent includes the contribution from seismic risk and is the maximum benefit for BBNPP. The maximum benefit for BBNPP is $52,064 (best estimate) and $87,530 (upper bound).based on the point estimate CDF with 2008 replacement power costs is $72,388.

The percentage contributions of each hazards group are slightly different for the mean value CDF. Therefore, seismic risk based on the mean value CDF is assumed to be 28 percent of total mean value CDF. The resulting maximum benefit on the mean value CDF would be $92,677.

7.3.3 Sensitivity Studies

Sensitivity cases were performed to investigate the sensitivity of certain parameters in the Bell Bend SAMDA analysis. A total of five sensitivity benefit calculations were performed for both the point estimate and mean value CDF with 2008 replacement power costs. Below is a brief description of the sensitivity cases.

- The first case investigated the sensitivity of the base case to the discount rate by assuming a lower discount rate of three percent. The method to calculate the present value of replacement power for a single event is discussed in U.S. EPR DC ER (AREVA 2009).
- The second case investigated the sensitivity of the base case to the discount rate by assuming a lower discount rate of five percent.
- The third case investigated the sensitivity of the base case to the on-site dose estimates. For the base case analysis, an immediate and long-term on-site dose to plant personnel following a severe accident is 3,300 rem and 20,000 rem, respectively. Therefore, this sensitivity case used the recommended high estimate dose values of 14,000 rem and 30,000 rem for immediate and long term dose on-site respectively, as suggested in (NRC, 1997).
- The fourth case investigated the sensitivity of the base case to the total on-site cleanup cost. For the base case analysis, the total on-site cleanup cost following a severe accident is taken to be $1,500,000. Therefore, this analysis assumed a high estimated on-site cleanup cost of $2,000,000 as suggested in (NRC, 1997).
- The fifth case also investigated the sensitivity of the increase in the replacement power cost for the U.S. EPR design. This sensitivity case projected that the cost of replacement power would double between 2008 and 2015. This would result in electricity cost of 24 cents/kw-h in 2015 based upon the assumption that the cost of electricity in 2008 is 12 cents/kw-h. The inflation rate for this sensitivity case was calculated using the the method outlined in (AREVA, 2009).

Table 7.3-2 and Table 7.3-3 provide the calculated benefit for the point estimate and mean value CDF with 2008 replacement power cost sensitivity cases discussed above.

7.3.4 Results and Summary

A total of 167 SAMDA candidates developed from industry and U.S. EPR documents were evaluated in the U.S. EPR DC ER completed by AREVA NP. The basis for screening is provided in detail for each SAMDA candidate in the U.S. EPR DC ER. Below is a summary of the results of the SAMDA analysis performed for the U.S. EPR and is applicable to BBNPP.

- Twenty-five SAMDA candidates were not applicable to the U.S. EPR design.

- ~~Seventy~~Sixty-nine SAMDA candidates were already implemented into the U.S. EPR design either as suggested in the SAMDA or an equivalent replacement that fulfilled the intent of the SAMDA. These SAMDA candidates are summarized in Table 7.3-4.
- Four SAMDA candidates were combined with another SAMDA because they had the same intent.
- ~~Fourty-five~~Fourty-three SAMDA candidates were categorized as not a design alternative because they were related to procedure modifications, training, or surveillance.
- One SAMDA candidate was categorized as very low benefit.
- ~~Twenty-three~~Twenty-five SAMDA candidates were categorized as excessive implementation cost.
- None of the SAMDA candidates were categorized as consider for further evaluation.

The low probability of core damage events in the U.S. EPR coupled with reliable severe accident mitigation features provide significant protection to the public and the environment. Specific severe accident mitigation design alternatives from previous industry studies, and from U.S. EPR probabilistic risk assessment (PRA) insights, were measured against broad acceptance criteria in the U.S. EPR DC ER (AREVA, ~~2007a).~~2009). Since none of the SAMDA candidates were categorized as considered for further evaluation, a cost-benefit analysis (i.e., risk reduction, value impact ratios) was not required for the U.S. EPR SAMDA analysis. The overall conclusion of the U.S. EPR SAMDA analysis is that no additional plant modifications are cost beneficial to implement due to the robust design of the U.S. EPR with respect to prevention and mitigation of severe accidents. The maximum benefit from the U.S. EPR DC ER was reevaluated for BBNPP. The detailed analysis and conclusions in the U.S. EPR DC ER remain applicable for BBNPP.

7.3.5 References

AREVA, ~~2007a.~~2009. AREVA NP Environmental Report Standard Design Certification, ANP-10290, Revision ~~0,~~1, AREVA NP, ~~November 2007.~~September 2009.

AREVA, 2007b. AREVA NP U.S. EPR Final Safety Analysis Report, Revision 0, AREVA NP, December 2007.

NEI, 2005. Severe Accident Mitigation Alternatives (SAMA) Analysis, Guidance Document, NEI 05-01, Revision A, Nuclear Energy Institute November 2005.

NRC, 1997. Regulatory Analysis Technical Evaluation Handbook, NUREG/BR-0184, Nuclear Regulatory Commission, January 1997.

Table 7.3-1— Severe Accident Cost Impact

	Best Point Estimate CDF (7% Discount Rate)Rate and 2008 Replacement Power Costs)	Upper BoundMean Value CDF (3%(7% Discount Rate)Rate and 2008 Replacement Power Costs)
Averted Occupational Exposure (AREVA, 2007a)	$264	$607$369
Averted Onsite Costs (AREVA, 2007a)	$29,680$45,102	$47,011$62,974
Averted Public Exposure	$6,332$6,247	$12,519$6,247
Averted Offsite Property Damage Costs	$2,870$2,814	$5,675$2,814
Severe Accident Cost Impact[(a)] Internal Events, Internal Flooding, Fire	$39,146$54,427	$65,812$72,404
Maximum Benefit[(b)] Internal Events, Internal Flooding, Fire, Seismic	$52,064$72,388	$87,530$92,677

Notes:
(a) Severe Accident Cost Impact is the sum of the Averted Occupational Exposure, Averted Onsite Cost, Averted Public Exposure and Averted Offsite Property Damage Cost.
(b) Maximum Benefit is calculated by increasing the Severe Accident Cost Impact by 33%.

Table 7.3-2— Maximum Benefit for Sensitivity Cases (Point Estimate CDF with 2008 Replacement Power Costs)

Case	Sensitivity Case 1: Discount Rate 3%	Sensitivity Case 2: Discount Rate - 5%	Sensitivity Case 3: High Estimated Dose (On-Site)	Sensitivity Case 4: High On-site Cleanup Costs	Sensitivity Case 5: Increase Replacement Power Cost via Inflation for 2015 Dollars
Immediate Dose Savings (On-site)	$97	$66	$209	$49	$49
Long Term Dose Savings (On-site)	$510	$317	$322	$215	$215
Total Accident Related Occupational Exposure **(AOE)**	$607	$384	$531	$264	$264
Cleanup/ Decontamination Savings (On-site)	$19,110	$13,053	$8,045	$10,727	$8,045
Replacement Power Savings (On-site)	$129,243	$62,524	$36,835	$36,835	$73,675
Averted Costs of On-site Property Damage **(AOSC)**	$148,353	$75,577	$44,880	$47,562	$81,720
Total On-site Benefit	**$148,960**	**$75,960**	**$45,411**	**$47,826**	**$81,984**
Averted Public Exposure **(APE)**	$12,354	$8,438	$6,248	$6,248	$6,248
Averted Offsite Damage Savings **(AOC)**	$5,565	$3,801	$2,814	$2,814	$2,814
Total Offsite Benefit	**$17,918**	**$12,239**	**$9,062**	**$9,062**	**$9,062**
Total Benefit (On-site + Offsite)	**$166,878**	**$88,199**	**$54,473**	**$56,888**	**$91,046**
Total Benefit (On-site + Offsite + External Events)	**$221,947**	**$117,305**	**$72,449**	**$75,611**	**$121,091**

Table 7.3-3— Maximum Benefit for Sensitivity Cases (Mean Value CDF with 2008 Replacement Power Costs)

Case	Sensitivity Case 1: Discount Rate 3%	Sensitivity Case 2: Discount Rate - 5%	Sensitivity Case 3: High Estimated Dose (On-Site)	Sensitivity Case 4: High On-site Cleanup Costs	Sensitivity Case 5: Increase Replacement Power Cost via Inflation for 2015 Dollars
Immediate Dose Savings (On-site)	$136	$93	$292	$69	$69
Long Term Dose Savings (On-site)	$712	$443	$449	$300	$300
Total Accident Related Occupational Exposure **(AOE)**	$847	$535	$741	$368	$368
Cleanup/ Decontamination Savings (On-site)	$26,682	$18,225	$11,233	$14,977	$11,233
Replacement Power Savings (On-site)	$180,452	$87,298	$51,430	$51,430	$102,867
Averted Costs of On-site Property Damage **(AOSC)**	$207,134	$105,522	$62,663	$66,407	$114,100
Total On-site Benefit	**$207,981**	**$106,058**	**$63,404**	**$66,775**	**$114,468**
Averted Public Exposure **(APE)**	$12,354	$8,438	$6,248	$6,248	$6,248
Averted Offsite Damage Savings **(AOC)**	$5,565	$3,801	$2,814	$2,814	$2,814
Total Offsite Benefit	$17,918	$12,239	$9,062	$9,062	$9,062
Total Benefit (On-site + Offsite)	**$225,900**	**$118,297**	**$72,466**	**$75,837**	**$123,530**
Total Benefit (On-site + Offsite + External Events)	**$289,151**	**$151,420**	**$92,756**	**$97,072**	**$158,118**

Table 7.3-4— SAMDA Candidates - Already Implemented

(Page 1 of 2)

SAMDA ID	Potential Enhancement
AC/DC-01	Provide additional DC battery capacity.
AC/DC-03	Add additional battery charger or portable, diesel-driven battery charger to existing DC system.
AC/DC-04	Improve DC bus load shedding.
AC/DC-05	Provide DC bus crossties
AC/DC-06	Provide additional DC power to the 120/240V vital AC system.
AC/DC-07	Add an automatic feature to transfer the 120V vital AC bus from normal to standby power.
AC/DC-09	Provide an additional diesel generator.
AC/DC-11	Improve 4.16 kV bus cross-tie ability.
AC/DC-14	Install a gas turbine generator.
AC/DC-16	Improve uninterruptible power supplies.
AC/DC-24	Bury off-site power lines.
AT-01	Add an independent boron injection system.
AT-02	Add a system of relief valves to prevent equipment damage from pressure spikes during an ATWS.
AT-07	Install motor generator set trip breakers in control room.
AT-08	Provide capability to remove power from the bus powering the control rods.
CB-01	Install additional pressure or leak monitoring instruments for detection of ISLOCAs.
CB-04	Install self-actuating containment isolation valves.
CB-10	Replace SGs with a new design.
CB-12	Install a redundant spray system to depressurize the primary system during an SGTR.
CB-14	Provide improved instrumentation to detect SGTR, such as Nitrogen-16 monitors.
CB-16	Install a highly reliable (closed loop) SG shell-side heat removal system that relies on natural circulation and stored water sources.
CB-20	Install relief valves in the CCWS.
CC-01	Install an independent active or passive high pressure injection system.
CC-04	Add a diverse low pressure injection system.
CC-05	Provide capability for alternate injection via diesel-driven fire pump.
CC-06	Improve ECCS suction strainers.
CC-07	Add the ability to manually align ECCS recirculation.
CC-10	Provide an in-containment reactor water storage tank.
CC-15	Replace two of the four electric safety injection pumps with diesel-powered pumps.
CC-17	Create a reactor coolant depressurization system.
CC-21	Modify the containment sump strainers to prevent plugging.
CP-01	Create a reactor cavity flooding system.
CP-03	Use the fire water system as a backup source for the containment spray system.
CP-07	Provide post-accident containment inerting capability.
CP-08	Create a large concrete crucible with heat removal potential to contain molten core debris.
CP-11	Increase depth of the concrete base mat or use an alternate concrete material to ensure melt-through does not occur.
CP-13	Construct a building to be connected to primary/secondary containment and maintained at a vacuum.
CP-17	Install automatic containment spray pump header throttle valves.
CP-20	Install a passive hydrogen control system.
CP-21	Erect a barrier that would provide enhanced protection of the containment walls (shell) from ejected core debris following a core melt scenario at high pressure.
CP-22	Install a secondary containment filtered ventilation.
CW-01	Add redundant DC control power for SW pumps.
CW-02	Replace ECCS pump motors with air-cooled motors.
CW-04	Add a SW pump.
CW-05	Enhance the screen wash system.

Table 7.3-4— SAMDA Candidates - Already Implemented

(Page 2 of 2)

SAMDA ID	Potential Enhancement
CW-06	Cap downstream piping of normally closed component cooling water drain and vent valves.
CW-10	Provide hardware connections to allow another essential raw cooling water system to cool charging pump seals.
CW-15	Use existing hydro test pump for RCP seal injection.
CW-16	Install improved RCP seals.
CW-17	Install an additional component cooling water pump.
EPR-01	Provide an additional SCWS train.
EPR-05	Add redundant pressure sensors to the pressurizer and SG.
FR-03	Install additional transfer and isolation switches.
FR-05	Enhance control of combustibles and ignition.
FW-01	Install a digital feed water upgrade.
FW-02	Create ability for emergency connection of existing or new water sources to feedwater and condensate systems.
FW-04	Add a motor-driven feedwater pump.
FW-07	Install a new condensate storage tank (auxiliary feedwater storage tank).
FW-11	Use fire water system as a backup for SG inventory.
FW-15	Replace existing pilot-operated relief valves with larger ones, such that only one is required for successful feed and bleed.
HV-01	Provide a redundant train or means of ventilation to the switch gear rooms.
HV-02	Add a diesel building high temperature alarm or redundant louver and thermostat.
HV-03	Stage backup fans in switchgear rooms.
HV-04	Add a switchgear room high temperature alarm.
HV-05	Create ability to switch EFW room fan power supply to station batteries in an SBO.
SR-01	Increase seismic ruggedness of plant components.
SR-02	Provide additional restraints for CO2 tanks.
OT-01	Install digital large break LOCA protection system.
OT-03	Install computer aided instrumentation system to assist the operator in assessing post-accident plant status.