November 8, 2004

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

Kewaunee Nuclear Power Plant
Docket 50-305
License No. DPR-43

NMC Response To NRC Request For Additional Information Regarding Response To Nuclear Regulatory Commission (NRC) Bulletin 2003-01 (TAC NO. MB9584)

References:

1) Letter from Nuclear Management Company to Document Control Deck, "Supplement to 60-Day Response to Bulletin 2003-01, 'Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors'," dated May 17, 2004.
2) Letter from Document Control Desk to Nuclear Management Company, LLC, "Kewaunee Nuclear Power Plant - Request For Additional Information Regarding Response To Nuclear Regulatory Commission (NRC) Bulletin 2003-01 (TAC NO. MB9584) ", dated September 7, 2004.

On June 9, 2003, the Nuclear Regulatory Commission (NRC) transmitted Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors". By letters dated August 7, 2003, and May 17, 2004, Nuclear Management Company, LLC, provided responses for the Kewaunee Nuclear Power Plant.

By letter dated September 7, 2004 (reference 2), the NRC requested additional information to perform their review of Kewaunee's Bulletin response.

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The enclosure to this letter provides the requested information. If you have any questions, please contact Mr. Jerry Riste (920) 388-8424.

This letter contains two new commitments and revises three existing commitments made in reference 1 as follows:

New Commitments

- NMC will enhance the sump clogging training module and will provide sump clogging training for the Emergency Directors before entering the operating mode exiting refueling outage 27.
- NMC will provide training on the importance of an aggressive cooldown, the impact of sump clogging on the IPEOP critical safety functions due to diminished ECCS/ICS performance, and on Severe Accident Management Guideline review of content and implementation, as appropriate to mitigate sump clogging, to the licensed reactor operators, licensed senior reactor operators, and shift technical advisors before entering the operating mode exiting refueling outage 27.

Revised Commitments

- NMC will evaluate and implement, as appropriate, COA #5 by May 31, 2005, at the Kewaunee Nuclear Power Plant.
- NMC will evaluate and implement, as appropriate, COA #6 by May 31, 2005, at the Kewaunee Nuclear Power Plant.
- NMC will evaluate and implement, as appropriate, COA #9 by May 31, 2005, at the Kewaunee Nuclear Power Plant.

I declare under penalty of perjury that the foregoing is true and accurate.
Executed on November 8, 2004

Thomas Coutu
Site Vice President, Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC

Enclosure (1)

cc: Administrator, Region III, USNRC
Project Manager, Kewaunee, USNRC
Senior Resident Inspector, Kewaunee, USNRC
Public Service Commission of Wisconsin

ENCLOSURE 1

NUCLEAR MANAGEMENT COMPANY, LLC ,

NMC response to NRC Request For Additional Information Regarding Response To Nuclear Regulatory Commission (NRC) BULLETIN 2003-01 (TAC NO. MB9584)

By letter dated August 7, 2003, Nuclear Management Company, LLC (NMC or the licensee) provided a 60-day response to Nuclear Regulatory Commission (NRC) Bulletin 2003-01 for the Kewaunee Nuclear Power Plant (KNPP). The Bulletin requested NMC to either (1) state that the emergency core cooling system (ECCS) and the containment spray system (CSS) recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in the Bulletin and are in compliance with all existing applicable regulatory requirements, or (2) describe any interim compensatory measures that have been implemented or that will be implemented to reduce the interim risk associated with potentially degraded or nonconforming ECCS and CSS recirculation functions until an evaluation to determine compliance is complete. On May 17, 2004, NMC submitted a supplement to its 60-day response which described the Westinghouse Owners Group (WOG) recommended candidate operator actions (COAs), which NMC planned to evaluate and implement at KNPP. On July 21, 2004, the NRC staff held a phone conversation with the NMC engineering staff during which it was established that NMC believes that the technical feasibility of certain COAs is not yet assured, that the COA evaluation period may extend into early 2005, and that no containment entry is required to implement any of the five COAs selected by NMC for KNPP. During that call, the NRC staff was informed that NMC believes that the KNPP design departs significantly from the design of the WOG WCAP-16204 Bulletin 2003-01 reference plant. The NRC staff completed its preliminary review of our response and has determined it needs additional information to complete its review.

The following is the list of the additional information the NRC staff requested with NMC's response.

1. *Please provide a detailed discussion of the NMC plans and schedule for study, evaluation, development, validation, implementation and training for COAs #5, #6, #8, and #9, currently planned to be implemented at KNPP. Please provide such a discussion for each COA individually for the time period May 2004, to November 2005. Within these discussions, please discuss in detail how differences between KNPP design and the WOG WCAP-16204 Bulletin 2003-01 reference plant design may impact these schedules. Also, please discuss any unique circumstances relating to engineering resources available within NMC which may impact these schedules.*

NMC Response:

By letter dated May 17, 2004, Nuclear Management Company committed to implementing Candidate Operator Actions (COA) 5, 6, 8 and 9 from WCAP-16204, Rev. 1, by November 30, 2005, and implementing COA 7 by February 28, 2005. The letter further stated that Kewaunee's Integrated Plant Emergency Operating Procedures (IPEOPs) already meet the intent of COAs 1 and 3, and COAs 2, 4, 10 and 11 would not be implemented because they were not applicable to Kewaunee or would result in undue risk to the station.

The justification behind the implementation schedule for COAs 5, 6, 8 and 9 was to issue the procedure changes at one time which would correspond with one session of training on containment sump screen blockage for each operating crew and technical staff that may be involved. COA 7 was determined to be conducive to an earlier issuance date since an operator briefing, versus formal operator training, was anticipated for the issuance of the procedure revisions for COA 7.

Since the issuance of NMC's May 17, 2004, letter, the actions required to complete each COA have been aggressively pursued. As a result, some of the COAs have already been implemented and work is ahead of schedule on the remaining COA items. The following is a summary of the updated status of the implementation of the COAs and a revised estimated completion date.

<u>COA 5, Refill Refueling Water Storage Tank</u>

A review has been completed as to when it would be appropriate to start refilling the RWST. As a result of this review, it was determined that a step should be added to ES-1.3, Transfer To Containment Sump Recirculation, to initiate refilling the RWST after its contents are depleted. In Revision X to ES-1.3 issued on October 28, 2004, the procedure was revised to add a step directing the operator to refill the RWST using normal methods and normal plant procedures. Since there are no new operator actions or tasks, training on this procedure change was accomplished using the Required Reading process.

This procedure change represents partial completion of Kewaunee's implementation of COA 5. The remaining action under COA 5 is to evaluate alternate methods of RWST makeup and incorporate these methods if any into procedures as deemed appropriate. This action will be completed as part of the development and implementation of a plant specific version of the Sump Blockage Control Room Guideline provided in WCAP-16204. See our response for COA 9 below for a development, validation, training, and implementation schedule for this procedure.

COA 6, Inject More Than One RWST Volume From a Refilled/Diluted RWST Or By Bypassing the RWST

For COA 6, Kewaunee has committed to perform an evaluation to determine if a revision to the Emergency Plan Implementing Procedures (EPIPs) used by the Technical Support Center should be made to address flooding concerns due to injecting more than one RWST volume.

Also for COA 6, Kewaunee has committed to perform an evaluation to determine the feasibility during containment sump recirculation of aligning the standby injection train or another means of injection to a refilled RWST or to an alternate source bypassing the RWST.

It has been determined that both of these actions will be completed as part of the development and implementation of a plant specific version of the Sump Blockage Control Room Guideline provided in WCAP-16204. See our response for COA 9 below for a development, validation, training, and implementation schedule for this procedure.

COA 7, Provide More Aggressive Cooldown and Depressurization Following a Small Break LOCA

A review of Kewaunee's IPEOPs relative to this COA has been completed. Based on that review, the following IPEOP procedures were revised on October 28, 2004, to add a note stressing the need for a rapid cooldown within Technical Specification limits.

- ES-1.2, Post LOCA Cooldown and Depressurization (Rev. O)
- ECA-3.1, SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired (Rev. T)
- ECA-3.2, SGTR With Loss of Reactor Coolant - Saturated Recovery Desired (Rev. S)

The new Note is easily understood and the basis for the Note is described in the associated IPEOP background documents. Therefore, no special training was required for this procedure change.

These procedure changes complete Kewaunee's implementation of COA 7.

COA 8, Provide Guidance on Symptoms and Identification of Containment Sump Blockage

The indications of sump blockage provided in WCAP-16204 were evaluated for applicability to Kewaunee. In the reference plant design, containment spray pumps and RHR pumps have separate suction lines from the containment sump. At Kewaunee, only the RHR pumps take suction from the sump. The RHR pumps then provide

suction to the containment spray pumps and SI pumps as required. At Kewaunee, cavitation must occur first in the RHR pumps before cavitation would be seen in the SI or containment spray pumps. Therefore, it has been determined that only the RHR pumps need to be monitored for cavitation during sump recirculation.

When monitoring for cavitation, WCAP-16204 recommended that an RHR pump's flow be stable and consistent with RCS pressure, discharge pressure should be stable and consistent with pump flow, and motor current be stable and consistent with pump flow. These recommended symptoms have been determined to be appropriate for use at Kewaunee.

Therefore, the following IPEOP procedures were revised on October 28, 2004, to monitor for RHR pump cavitation using the symptoms recommended in WCAP-16204:

- ES-1.3, Transfer to Containment Sump Recirculation (Rev. X)
- ECA-1.1, Loss of Emergency Coolant Recirculation (Rev. Q)
- FR-Z.1, Response to High Containment Pressure (Rev. M)

The new symptoms are uncomplicated and easily understood, therefore training on this procedure change was accomplished using the Required Reading process.

These procedure changes complete Kewaunee's implementation of COA 8.

<u>COA 9, Develop Contingency Actions in Response to Containment Sump Blockage, Loss of Suction and Cavitation</u>

While on sump recirculation, the Kewaunee IPEOPs direct the operator to throttle RHR pump flow in response to indications of RHR pump runout or RHR pump cavitation. The procedures require that a minimum RCS injection flow rate be maintained at all times. The procedures expressed this minimum flow requirement as a single value for cold leg injection and a different single value for upper head injection.

A review of these minimum RCS injection flow rate requirements was performed to determine if a variable setpoint based on time after shutdown could be used such that RCS injection flow could be minimized while still maintaining core cooling. This review determined that the single flow values currently in the procedures are required by the licensing basis for RHR pump runout conditions. However, it was also determined that a variable minimum flow requirement based on time after shutdown was appropriate for situations where RHR pump cavitation has been detected.

Therefore, the following IPEOP procedures were revised on October 28, 2004, to retain single flow values for minimum RHR flow during runout conditions while allowing a variable minimum flow requirement for RHR pump cavitation conditions. These

procedure changes lower the minimum RCS injection flow rates for conditions where the RHR pumps are cavitating in order to decrease differential pressure across the sump screens.

- ES-1.3, Transfer to Containment Sump Recirculation (Rev. X)
- ECA-1.1, Loss of Emergency Coolant Recirculation (Rev. Q)
- FR-Z.1, Response to High Containment Pressure (Rev. M)

The graph used to determine minimum required RCS injection is the same curve previously found in ECA-1.1 and the revised procedure steps are self explanatory. Therefore, training on this procedure change was accomplished using the Required Reading process.

These procedure changes represent partial completion of Kewaunee's implementation of COA 9.

A review has been performed to determine if additional procedure guidance is required in response to sump blockage. This review included an assessment of the Sump Blockage Control Room Guideline (SBCRG) provided in WCAP-16204 for plant specific applicability and possible conversion to a plant specific procedure. This review also included a comparison of Kewaunee plant design to the WOG reference plant design to determine if the WOG generic procedure could be successfully adapted for use at Kewaunee. As a result of this review it has been determined that a plant specific version of the SBCRG is appropriate for Kewaunee and that this plant specific procedure should be developed.

Development of a plant specific sump blockage procedure will follow the same process used to convert WOG Emergency Response Guidelines into Kewaunee's plant specific IPEOPs. This development will also include completion of the evaluations needed to complete COA 5 and COA 6. Results of these evaluations will be factored into the plant specific sump blockage procedure or other plant procedures are deemed appropriate. Procedure development will be followed by simulator validation. Licensed operator training for this activity is planned for the second licensed operator training cycle in 2005, which begins in February and ends in April 2005. Procedure issuance would follow.

NMC has evaluated the engineering resources and there are no unique circumstances which would impact these schedules. NMC has determined there are sufficient engineering resources to complete the required evaluations to support the accelerated schedule.

New estimated completion date: May 31, 2005

2. *Please address any specific aspects of the KNPP design, relative to the issue of recirculation blockage, that would indicate that the schedule you plan for implementation of the COA's is commensurate with the reduction in risk which could be achieved with an earlier implementation.*

NMC Response:

KNPP Design Features

KNPP staff completed a walkdown of containment during the Spring 2003 Refueling Outage to support resolution of GSI-191. The walkdowns were conducted using the guidance in NEI 02-01, Rev. 1, Condition Assessment Guidelines: Debris Sources Inside PWR Containments, dated September 2002. The findings of this walkdown are summarized as follows:

Insulation

Kewaunee has mainly reflective metal insulation in Loss of Coolant Accident (LOCA) destruction zones. Break locations considered were Reactor Coolant System (RCS) piping, including connecting piping greater than or equal to two inches in diameter, up to the first isolation valve.

Reflective metal insulation (RMI) was found to exist on the following piping lines and components in LOCA destruction zones:

- RCS piping
- Residual Heat Removal connecting to RCS *
- Safety Injection to RCS cold leg
- RCS RTD manifold lines
- Safety Injection to Reactor Vessel Injection
- Excess Letdown Line
- Letdown Line
- Charging Line
- Pressurizer Spray Line
- Pressurizer to Block Valve PR-1A(B)

- Pressurizer Surge Line
- Steam Generators, Reactor Coolant Pumps, Reactor Vessel, Pressurizer

* An isolated four-foot length of calcium silicate insulation exists near the first isolation valve from the RCS on both trains.

Piping or components in LOCA destruction zones that were found to have other insulation types included:

- Calcium silicate insulation (thermobestos) on two-inch diameter steam generator blowdown piping that runs through the RCS loop vaults.

- Fiberglass insulation (Temp Mat) on the pressurizer surge line pipe supports.

- Fiberglass insulation on two three-inch diameter service water pipes that traverse through the upper elevation of reactor coolant pump "B" vault. A small portion of the two lines is in a LOCA destruction zone.

- Fiberglass and fire wrap insulation can be found adjacent to small break LOCA piping, however, due to the break sizes, the debris generated would be minimal.

Coatings

KNPP has a Protective Coatings Program with procedural controls to ensure the proper application and inspection of coatings, and maintenance of coatings logs. The KNPP Coatings Specialist supplied the following coatings information during the 2003 refueling outage.

KNPP's Containment Unqualified Coatings Log indicates there currently is 3.052 cubic feet of unqualified coatings in containment, using conservative assumptions. Of that quantity, 2.274 cubic feet is unqualified coatings and 0.778 cubic feet is factory coatings. Unqualified coatings in containment continue to be removed when practical.

KAP evaluation 96-471 and Calculation C10922 performed an analysis, which assumed 8.0 cubic feet of unqualified coatings in containment fails post-accident. The analysis concluded that the failed coatings would not result in inoperability of the ECCS or ICS systems. The current amount of unqualified coatings in containment is significantly less than the value assumed in 1997 when these studies were performed.

Sump Screens and NPSH Margin

KNPP's sump screens were inspected during the 2003 Refueling Outage during containment walkdowns using the guidance in NEI 02-01, Revision 1. The sump screens are also routinely inspected following refueling outages, as required by procedure GNP-12.17.01, Pre-Criticality Containment Inspection. No gaps or breaches have been identified.

Kewaunee's screens are constructed of Johnson screen material, with slot openings measuring approximately 1/8 inch x 15/32 inch. There are two screens mounted over a common sump, with a total screen surface area of approximately 39 square feet. The screens are not in a LOCA destruction zone.

Calculation C11023, Revision Original, was performed in July 1998. This calculation concluded sufficient NPSH margin exists for the residual heat removal pumps at the onset of containment recirculation, with the partially submerged screens assumed to have 95% blockage. At these conditions, the calculated $NPSH_{available}$ is 19.77 feet, as compared to 8 feet $NPSH_{required}$. Therefore, significant NPSH margin exists for the RHR pumps.

Holdup Areas and Transport

Containment drainage paths, holdup areas and transport velocities have been studied. An overview of this topic was submitted in the response to Bulletin 2003-01, on August 7, 2003. The discussion concluded that Kewaunee's containment is conducive to directing flow to the containment sump and holdup areas were previously known and evaluated as not significantly impacting sump recirculation inventory. Transport velocities in containment were studied in 1997 (ref. KAP 96-471 and Calculation C10922, Revision Original). The study resulted in implementing modifications to prevent or minimize the transport of unqualified coatings or other debris without having a negative affect on recirculation inventory. The transport study also concluded that velocities in the containment basement are low (< 0.1 ft/sec), thereby limiting the amount of debris that will transport to the sump screens.

KNPP Design Summary

Plant-specific evaluations performed to date indicate Kewaunee has many design attributes to prevent sump screen blockage, including:

- There is mostly reflective metal insulation in LOCA zones of destruction.
- There are minimal unqualified coatings in containment.
- There is 11.77 feet NPSH margin at worst case recirculation conditions (partially submerged screens with assumed 95% blockage).
- There are low transport velocities in the recirculation pool (containment basement elevation) and in the vicinity of the sump screens.

Debris generation and transport evaluations will be conducted as part of resolution of GSI-191 to determine if the current design attributes are adequate to prevent recirculation sump screen blockage and debris ingestion.

As stated in response to Question 4 below, in addition to the Candidate Operator Actions that we have already implemented, Kewaunee has performed plant specific activities to further minimize the risk associated with the potential for sump blockage. Those activities included additional operations procedure revisions, improving inspection procedures to ensure containment cleanliness, the continued removal of miscellaneous debris sources in containment, and procedure guidance to prevent placement of equipment labels in containment that can become a debris source.

Kewaunee's positive design attributes along with the activities already completed will minimize the risk associated with the potential for sump blockage. The remaining Candidate Operator Actions will be completed on an accelerated schedule to complete the compensatory measures for the sump blockage issue.

3. *On pages 1 and 2 of Attachment 1 of your Bulletin 2003-01 response, you listed a number of "Just-in-Time" training topics. However, your response does not completely discuss the operator training to be implemented. Please provide a detailed discussion of the operating procedures to be implemented, the indications of sump clogging that the operators are instructed to monitor, and the response actions the operators are instructed to take in the event of sump clogging and loss of ECCS recirculation capability.*

NMC Response:

Just-In-Time Briefing Conducted in Response to Bulletin 2003-01

During the fifth licensed operator training cycle in 2003, control room staff (i.e., licensed reactor operators, licensed senior reactor operators, and shift technical advisors) were provided a Just-In-Time briefing on loss of emergency core cooling recirculation due to sump screen blockage. In NMC's Bulletin 2003-01 response dated August 7, 2003, NMC stated this training would be provided to the operating staff. NMC's determined this statement to include licensed reactor operators, licensed senior reactor operators, and shift technical advisors. This briefing is complete.

The briefing included the following topics:

- Industry operating experience events
- Generic Safety Issue 191
- NRC Bulletins 93-02, 95-02, 96-03 and 2003-01
- Sump Screen Design
- Chokepoints (downstream effects)
- Downstream equipment vulnerability
- IPEOPs applicable to establishing recirculation, loss of recirculation, and inadequate or degraded core cooling
  - Indications of sump clogging
    - reduced or fluctuating system flow
    - reduced or fluctuating pump differential pressure
    - reduced or fluctuating pump amperage
    - change in plant heat up rate
    - alarms for abnormal flow and pump parameters
  - Management expectations for monitoring equipment for adverse trends
  - Future compensatory measures stated in KNPP's response to Bulletin 2003-01
  - Completed compensatory measures
    - ensured sump screens are free of gaps and breaches
    - performed a transport study in 1997 which determined containment drainage paths are not blocked
    - existing procedures for containment cleaning and control of foreign materials
    - existing procedural guidance for supplying alternate water sources to the RWST

Sump Clogging Training Conducted in Response to Bulletin 2003-01

During the sixth licensed operator training cycle in 2003, sump clogging training was provided to operating staff. This was accomplished by use of Simulator Exercise Guide SEG LRC-03-SE601.

The objectives for this training included, but were not limited to:

- Determine the proper functioning of emergency core cooling components while responding to a reactor trip with safety injection.
- Transfer to containment sump recirculation given a low RWST level.
- Respond to a loss of emergency coolant recirculation.
- Respond to a high containment pressure condition.

The simulator training utilized the following operating procedures:

- A-RC-36D, Reactor Coolant Leak
- E-0, Reactor Trip or Safety Injection
- E-1, Loss of Reactor or Secondary Coolant
- FR-P.1, Response to Imminent Pressurized Thermal Shock
- FR-Z.1, Response to High Containment Pressure
- ES-1.3, Transfer to Containment Sump Recirculation
- ECA-1.1, Loss of Emergency Coolant Recirculation
- UG-0, User's Guide for Emergency and Abnormal Procedures

Response actions related to sump blockage that the operators were instructed to take included those actions stated in the IPEOPs:

- Upon establishing recirculation:
    - Monitor RHR pump motor current, discharge pressure and pump flow.
    - If the RHR pump is in runout or cavitating and is not supply SI, throttle RHR pump discharge valve RHR-8A(B) to minimize RHR pump amps while maintaining the minimum injection flow.
    - If the RHR pump is in runout or cavitating and it is supplying a SI or ICS pump, throttle as necessary RHR-8A(B), or locally throttle ICS and/or SI pump discharge valves ICS-7A(B) and SI-7A(B) to minimize RHR pump amps while maintaining the minimum injection flow.
    - Request the Technical Support Center perform the following:

- trend wide range sump level
- monitor for stable sump level and evaluate high level conditions (unexpected water sources entering the sump) or low level conditions (leakage outside containment)
- obtain containment samples for pH and boron concentration
- begin evaluating alternate core injection paths
- evaluate alternate means of filling the RWST
- evaluate for long term sump blockage concerns

- Upon inability to establish or maintain recirculation, enter ECA-1.1, Loss of Emergency Coolant Recirculation.

Trainee actions that were evaluated during this session included:

- Determining the appropriate emergency event classification.
- Coordinating implementation of the IPEOPs in accordance with the IPEOP User's Guide.
- Responding to a reactor trip with safety injection.
- Responding to a loss of reactor or secondary coolant.
- Performance of shift technical advisor duties.

During NMC's review of the sump clogging training that was provided as a part of commitment 1 of NMC's August 7, 2003, Bulletin 2003-01 response, some discrepancies were noted.

1. All Emergency Directors and auxiliary operators were not trained on the material designated.
2. The sump clogging training module lacked training on points 2 (importance of an aggressive cooldown), 4 (review the impact of sump clogging on the IPEOP critical safety functions due to diminished ECCS/ICS performance), and 5 (Severe Accident Management Guideline review of content and implementation).

NMC has reviewed the changes to the plant operating procedures and determined that the interim compensatory actions did not add any new tasks to those tasks the auxiliary operators already perform and thus training for the auxiliary operators is not necessary. As NMC did not train all the Emergency Directors and did not provide adequate training on points 2, 4, and 5, NMC will train all the Emergency Directors on these items designated for the sump clogging training; and will train the licensed operators, licensed senior operators, and the shift technical advisors on points 2, 4, and 5 prior to the operating mode during KNPP's current refueling outage, Refueling 27.

As a part of the Systematic Approach to Training (SAT) process, the above topics will be evaluated to determine if and in what settings modifications will be made to initial or continuing training programs.

4. *NRC Bulletin 2003-01 provides possible interim compensatory measures licensees could consider to reduce risks associated with sump clogging. In addition to those compensatory measures listed in Bulletin 2003-01, licensees may also consider implementing unique or plant-specific compensatory measures, as applicable. Please discuss any possible unique or plant-specific compensatory measures you considered for implementation at your plant. Include a basis for rejecting any of these additional considered measures.*

NMC Response:

Unique or Plant-specific compensatory measures that have already been taken to address the potential for sump screen blockage, included:

- Revisions to the Integrated Plant Emergency Operating Procedures (IPEOPs) to throttle the RHR pump discharge valves to minimize flow through the sump screens in the event that cavitation is occurring in the RHR pumps. These changes were made to address pump cavitation due to sump screen blockage. This change was incorporated into the following IPEOPs on September 30, 2003:

    - ES-1.3, Transfer to Containment Sump Recirculation (Rev. W)
    - ECA-1.1, Loss of Emergency Coolant Recirculation (Rev. O)
    - FR-Z.1, Response to High Containment Pressure (Rev. L)

    - A revision was made to ES-1.3 on November 25, 2003, to request the Technical Support Center evaluate the following items:

        - alternate core injection paths
        - alternate means of filling the RWST
        - long term sump blockage concerns

- During containment walkdowns conducted for the 2003 Refueling Outage, an inventory of miscellaneous containment debris sources was compiled. The list included items such as plastic or fiber equipment labels, duct tape, foot grips, and other miscellaneous debris sources. Work orders were written to remove these items or replace them with more suitable substitutes. The work orders are being implemented during the Fall 2004 Refueling Outage. Any item that cannot be removed will be included in the debris generation study for KNPP.

- The procedure for routine containment inspections at power and the pre-criticality containment inspection procedure were improved to ensure potential post-LOCA debris sources are identified and removed from containment. The revisions included, but were not limited to:

    - verifying permanent tool boxes in containment have their covers secured
    - verifying steam generator manway laydown tables are secured
    - inspecting the crane cab near reactor coolant pump vault 1A
    - verifying installation of the lower reactor cavity sump standpipe (the standpipe minimizes debris transport through the cavity drain)
    - placing inspection requirements from the body of the procedure into a checklist to ensure inspection activities are not inadvertently missed
    - documenting the individual responsible for resolution of reportable conditions

- Kewaunee implemented new procedures to provide guidance for plant equipment labeling. The new procedures include guidance for labeling equipment in containment to prevent the placement of unsuitable equipment labels that can become post-LOCA debris sources. Those procedures are:

    - NAD-3.27, Plant Equipment Labeling Standard (Rev. A)
    - GNP-3.27.01, Plant Equipment Labeling Procedure (Rev. A)