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ESK-96-067

May 15, 1996

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555

Attention: Document Control Desk

Subject: Quad Cities Nuclear Power Station Units 1 and 2 Performance Goals
made to the U. S. Nuclear Regulatory Commission in the J. Brons to NRC
letter dated December 26, 1995, Status Report

The purpose of this letter is to report the results of Quad Cities short term performance upgrade activities described in the subject letter. These activities are part of the overall performance improvement actions taken in the continuing implementation of the Quad Cities Course of Action (COA).

The subject letter described twenty-seven (27) Quad Cities actions that were to be completed by April 30, 1996. Activities have been completed which satisfactorily fulfill the twenty-seven (27) committed actions, as summarized in Attachment (A). Nineteen (19) performance results were achieved by April 30, 1996 and are also assessed in Attachment (A).

Our letter of March 12, 1996 to the Commission provides the most recent update on overall progress of the COA. The COA remains the key to successful, long term improvements, and the year to year Management Plans provide an effective implementation strategy. Completion of the COA does not imply that all desired improvements have been effected although all the COA objectives will have been met. Additional short and long term improvement activities are being identified as we proceed and a continuing implementation program will be initiated as the COA is completed.

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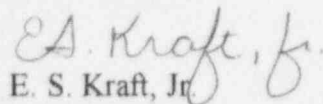
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I am ready to discuss any questions you may have on this material and may be reached by telephone at (309) 654-2241, ext. 3600.

Sincerely,



E. S. Kraft, Jr.
Site Vice President
Quad Cities Station

Attachment: (A) Status of ComEd Quad Cities Commitments dated
December 26, 1995

cc: W. T. Russell, Director for the office of NRR
J. M. Taylor, Executive Director for Operations, NRR
H. J. Miller, Regional Administrator - RIII
R. M. Pulsifer, Project Manager - NRR
C. G. Miller, Senior Resident Inspector - Quad Cities
D. C. Tubbs, MidAmerican Energy Company
R. J. Singer, MidAmerican Energy Company

ATTACHMENT (A)

SIGNIFICANT WORK ACTIONS TO BE COMPLETED BY APRIL 30, 1996

HUMAN PERFORMANCE

- **Issue 1996 Management Plan.** {This is designed to close out the Quad Cities Course of Action (COA)}.

The Management Plan was issued on January 18, 1996. A revision to the plan was issued on April 10, 1996 and includes the actions to implement and complete the COA by the end of 1996.

- **Improve radworker practices by:**

Training new employees with two (2) day Nuclear General Employee Training (NGET).

Radworker practices were improved by training new employees with two (2) day NGETs. All new employees starting employment at Quad Cities Station after December 1995 have received the two (2) day NGET. The expanded NGET includes: Radiation Protection introduction, biological effects and risk, ALARA, exposure limits, dosimetry/instrumentation, contamination control, Dry Active Waste (DAW) minimization, Radiation Work Permit (RWP)/survey maps and dressout. The major improvement to the NGET training was the addition of a practical demonstration of Radiation Protection practices (from start of job to finish) given by a Radiation Protection Technician (RPT).

Completing and distributing Radworker Handbooks to all employees.

A Radworker Handbook was distributed to all personnel at Quad Cities Station during January, 1996. Additionally, all new personnel receive a copy of the Handbook during NGET.

- **Complete Maintenance First Line Supervisor Training.**

All current Maintenance Department First Line Supervisors completed supervisor training on December 15, 1995. This training was a newly developed course for the station and includes: conduct of maintenance, configuration control, communication and observation skills, training on procedures, and employee relations.

SIGNIFICANT WORK ACTIONS TO BE COMPLETED **BY APRIL 30, 1996**

- **Senior Managers will attend Root Cause Analysis Training.**

Forty-nine (49) senior managers and plant managers attended root cause analysis training between January 25, 1996 and April 26, 1996. This training provided the managers with an insight into the processes, capabilities, limitations and expected results of these processes.

- **Completion of Operations procedures required to implement the Technical Specifications Upgrade Project.**

Operations procedures required to implement the Technical Specifications Upgrade Project have been completed as of April 30, 1996. This will support the implementation of the Technical Specification Upgrade by mid-1996.

- **Implement the revised Out-of-Service Program**

The revised Out-of-Service Program was implemented at Quad Cities Nuclear Power Station on January 31, 1996. The program was revised to include several improvements based on the recommendations of a Task Force which reviewed recent out-of-service problems experienced at Quad Cities and the out-of-service programs used at selected other nuclear plants outside ComEd which are considered industry leaders (e.g., Peach Bottom). The improvements include:

- ◇ Out-of-service documentation is reviewed by the work group supervision.
- ◇ Major portions of systems are generally removed from service for simplification and ensuring safe working conditions have been established and are maintained.
- ◇ Out-of-service documentation for specific jobs has a narrow scope to facilitate local change of conditions to permit trouble-shooting and testing.
- ◇ Information tags are used in controlled conditions in place of Danger tags to permit local operation of equipment with Operations specific concurrence.

- **Continue site emphasis on Industrial Safety.**

The station continues to emphasize Industrial Safety. In February 1996, a handbook was issued to all personnel on-site and an action plan has been implemented to improve safety on-site by focusing on personnel awareness, and the formation of a task force to focus on safety improvement.

**SIGNIFICANT WORK ACTIONS TO BE COMPLETED
BY APRIL 30, 1996**

- **Seven additional site personnel to attend Nuclear Business Leadership training.**

Seven additional Quad Cities Station personnel graduated from the Nuclear Business Leadership training course in March 1996.

- **Complete development of a comprehensive Work Analyst training program.**

Quad Cities has developed a comprehensive Work Analyst training program as part of our effort to improve Work Analyst performance. Development of the Work Analyst training program was completed on February 15, 1996. This training program includes: parts identification and procurement, work instructions, manpower needs and specification of support needs.

- **All existing Temporary Alterations in place for over ninety (90) days will have action plans established for permanent resolution.**

All temporary alterations open greater than ninety (90) days on or before April 30, 1996 have an action plan established for permanent removal. The Station's Technical Review Board (TRB) is reviewing temporary alterations open greater than ninety (90) days on a monthly basis to ensure removal plans are being implemented per schedule.

- **Provide training to Site Quality Verification personnel on the Quality Verification Instructions.**

Site Quality Verification personnel have received training on the Quality Verification Instructions. This training was completed on March 17, 1996. This training provided expectations and further clarification to station SQV personnel for the performance of their duties. Topics included escalation of station issues, monthly reports and the purpose of the Quality Verification Instructions.

- **Assess current succession planning program.**

The station has assessed the current succession planning program for all site positions from Department Head level to Superintendent level. Candidates for these positions have been identified and action plans developed for these individuals to prepare them for the position.

SIGNIFICANT WORK ACTIONS TO BE COMPLETED **BY APRIL 30, 1996**

- **Dedicate a group of engineers to facilitate root cause investigations**

A group of engineers have been assigned to develop a root cause process and facilitate root cause investigations. Examples of use of these personnel include the following:

- ◇ Ad hoc use in the investigation of selected, important problems including the resolution of long-standing problems in the HPCI System, and investigation of the causes of high personnel radiation exposure during the most recent refueling outage of Unit 1.
- ◇ Providing leadership in developing a program to identify historical problems which impacted system availability or reliability, performing a Pareto analysis of these problems, and assisting the System Engineers to determine the root causes and identify corrective actions.

EQUIPMENT PERFORMANCE

- **Overhaul Control Rod Drive Hydraulic Control Units on Unit 1**

Overhaul of ninety (90) Control Rod Drive Hydraulic Control Units on Unit 1 was completed on April 24, 1996. This overhaul included:

- ◇ Refurbishment of scram valves
- ◇ Replacement of accumulators based on leakage testing.
- ◇ Pre-emptive replacement of directional control valves based on limited failures that have been experienced.

- **Refurbish Reactor Recirculation Motor Generator Set Speed Controllers on Unit 1**

The motor generator set speed controllers were refurbished in 1994. The station has subsequently implemented improved preventive maintenance requirements including periodic overhaul and calibration of the scoop tubes, and replacement of motor brushes and bearings. This was accomplished during Q1R14.

- **Refurbish Unit 1 Feedwater Level Control**

During Q1R14 the actuators on the feedwater regulating valves were replaced and the control system was refurbished to support operation in three element automatic control. Testing to confirm the adequacy of these activities will be performed during Unit 1 startup.

SIGNIFICANT WORK ACTIONS TO BE COMPLETED **BY APRIL 30, 1996**

- **Refurbish Unit 1 Electro-Hydraulic Control (EHC) System**

A range of refurbishment activities were completed on the EHC System during Q1R14 to address/reduce system leaks (e.g., replacement of mechanical fittings, installation of additional isolation valves), system electronic noise (e.g., installation of integrated circuit operational amplifiers, resolution of grounding problems), and nuisance alarms in the control room (e.g., replacement of EHC cabinet cooling fans)

- **Install Reactor Core Shroud Repair on Unit 1**

The shroud repair modification was installed during Q1R14 to address the potential for cracks in the circumferential welds in the core shroud. This modification will ensure the structural integrity of the core shroud under design basis conditions.

- **Complete Reactor Water Cleanup (RWCU) System heat exchanger and major piping replacement on Unit 1**

Based on inspection results of RWCU piping in response to Generic Letter 88-01, the RWCU heat exchangers and major piping were replaced on Unit 2 in 1995 and Unit 1 during the recent refueling outage (Q1R14).

- **Continue accelerated replacement/overhaul of Control Rod Drives (CRD) on Unit 1**

Twenty-seven (27) Unit 1 CRDs were replaced during the recent refueling outage (Q1R14), based on performance parameters such as required operating pressure, stall flow and drive temperature.

- **Install improved feedwater flow measuring device on Unit 1**

During the recent refueling outage (Q1R14), a permanent ultrasonic feedwater flow measuring device was installed in Unit 1. This equipment, which has been successfully applied in other nuclear units, will provide the capability to confirm/verify the accuracy of the feedwater flow measurement on a continuing basis. Testing of this new flow measuring equipment will be completed during startup of Unit 1 from Q1R14.

SIGNIFICANT WORK ACTIONS TO BE COMPLETED **BY APRIL 30, 1996**

- **Removal of ten (10) operator workarounds during Q1R14**

Twelve (12) operator workarounds were removed in Unit 1 during Q1R14, as of April 27, 1996. This action continues our ongoing program to reduce the number of operator workarounds from over one hundred (100) in mid-1995 to our current total of thirty-two (32) workarounds. Examples of important workarounds which have been resolved include:

- ◇ The 1A feedwater regulating valves would not operate in automatic
- ◇ Leak-by of valves in the Shutdown Cooling System

- **Reduce the number of control room deficiencies by 25%**

Quad Cities has taken several important steps over the past several months in our continuing program to reduce the number of control room deficiencies. These have included:

- ◇ Implementing an improved procedure (3/14/96) and tracking system for control room deficiencies. Control room deficiencies had been inconsistently identified, categorized and tracked.
- ◇ Re-baselining of all control room deficiencies by the Operations staff.
- ◇ Reducing the number of re-baselined control room deficiencies by over 25% since March 1996 from seventy-nine (79) to a current total of fifty-two (52) (April 27, 1996).

- **Implement amended High Pressure Coolant Injection and Reactor Core Isolation Cooling (HPCI/RCIC) System Improvement Plans focused on increasing the reliability of these systems.**

Using the approaches being developed to improve the root cause process, HPCI and RCIC System components were prioritized based on contribution to system unavailability. The HPCI and RCIC Improvement Plans were reviewed and determined to include actions to address these components. Examples of these corrective actions which have been implemented include:

HPCI

- ◇ Disassembly of HPCI Turbine Stop Valve to investigate the cause of failures attributable to valve internals. A valve bonnet leak was identified and corrected.
- ◇ Reviewed and/or revised motor speed changer preventive maintenance (PM) frequencies.

SIGNIFICANT WORK ACTIONS TO BE COMPLETED **BY APRIL 30, 1996**

- ◇ Inspected check valve (2301-45) based on IST failures, with diagnostic testing scheduled during, and after, start-up from Q1R14 to provide additional data for root cause determination.

RCIC

- ◇ Replacement of the Electro-Mechanical Hydraulic Actuator (EGR) governor.
- ◇ Adjustment of the electronic speed control function in the Flow Indicating Controller to adjust the turbine ramp speed to design conditions and provide additional margin to overspeed conditions during startup of the turbine driven pump.
- ◇ Refurbishment/design change to the overspeed tappet and implementation of preventive maintenance requirements based on adverse industry experience.

- **Complete the electrical bus ties for the Station Blackout Diesel Generator on Unit 1**

The electrical bus ties for the Station Blackout Diesel Generator were physically made in Q1R13 with the completion of the control wiring at the 4 kV safety buses during Q1R14. Additionally during Q1R14, simulated station blackout testing for Unit 1 was completed using the Station Blackout Diesel to power each safety-related 4 kV safety bus. The Station Blackout Diesel Generator will be made operable, as committed previously, following additional testing which includes the twenty-four (24) hour endurance run.

- **Complete permanent installation of the Scram Discharge Volume instrumentation on Unit 1.**

A design change for the level instrumentation logic for the Scram Discharge Volume (SDV) was implemented during Q1R14. This design change, which removed a temporary alteration, permanently eliminated the potential for a single failure of certain SDV circuitry relays to render the level instrumentation inoperable.

- **Complete 1B Pumpback (Joy) Air Compressor modification on Unit 1.**

The modification to the drywell-to-tank differential pressure air compressor on Unit 1 was completed in December 1995, and the 1B air compressor is now operational.

**SIGNIFICANT PERFORMANCE RESULTS TO BE REALIZED
BY APRIL 30, 1996**

HUMAN PERFORMANCE

- **The Course of Action (COA) will be 50% complete after completion of the 1995 Management Plan.**

The COA is now approximately 50% complete by qualitative assessment. The remaining portions of the Course of Action continue to be completed via the 1996 Management Plan.

- **Expect improved productivity in Maintenance as a result of the Work Process Improvement Effort.**

Maintenance productivity has increased since the Work Process Improvement Effort. Schedule adherence has increased to greater than 80%. Scheduled work package preparation has increased to greater than 70%. Fix-It-Now production has increased from one hundred eighty (180) to one hundred ninety-five (195) activities per month even though an outage is in progress.

- **Achieve zero (0) overdue investigations and corrective actions for Level 2 and 3 PIFs.**

As of April 30, 1995 there were zero (0) overdue investigations and corrective actions for Level 2 and 3 PIFs. In March of 1996 this number was approximately one hundred forty (140) items; on April 30, 1996, this item was zero (0). Management has reinforced that there are to be no overdue items for each department.

- **Complete 100% of classroom phase for assigned managers in the Senior Reactor Operator Certification.**

All eight (8) managers assigned to Senior Reactor Operator Certification have completed 100% of the classroom phase of their training. This training further enhanced the technical knowledge of management personnel.

- **Seventeen (17) total graduates from the Nuclear Business Leadership class.**

Seventeen (17) Quad Cities personnel have graduated from the Northwestern University Nuclear Business Leadership class during 1995 and 1996.

**SIGNIFICANT PERFORMANCE RESULTS TO BE REALIZED
BY APRIL 30, 1996**

- **Achieve zero (0) overdue "significant" (NRC, INPO and SQV) commitments.**

As of April 30, 1996 there are zero (0) overdue NRC, INPO and SQV commitments. Management expectations have been reinforced that there will be no overdue commitments. The station meets weekly to discuss the status of items and their resolution.

- **Reduce High Radiation Area events by 50% from 1995 levels.**

In 1995 there were ten (10) High Radiation Area events. This equates to a monthly rate of .83, or 3.33 events in a four (4) month period. During the first four (4) months of 1996 there was one High Radiation Area event. We continue to emphasize compliance with radiation protection procedures for high radiation areas as part of yearly NGET, and by continuing management reinforcement.

- **Reduce significant human performance events (Level 2 PIFs) to \leq two (2) per year to date.**

As of April 30, 1996, there was one (1) significant human performance event. In 1995 there were eight (8) human performance events.

- **Achieve less than 2.5 Personnel Contamination Events per 10,000 Radiological Work Permit Hours.**

As of April 30, 1996, there were 1.2 Personnel Contamination Events per ten thousand (10,000) Radiological Work Permit Hours.

- **Achieve improved root cause analysis results by Engineering.**

Quad Cities is pursuing improved root cause analysis through the efforts of a recently established Root Cause Group within Site Engineering (refer to Human Performance Section of this Attachment). The effectiveness of these efforts (to improve root cause analysis) can only be confirmed through long-term reductions in repeat equipment failures and sustained improved system performance.

**SIGNIFICANT PERFORMANCE RESULTS TO BE REALIZED
BY APRIL 30, 1996**

EQUIPMENT PERFORMANCE

- **Improved performance from major equipment that was refurbished or overhauled.**

Major equipment that has recently been refurbished or overhauled (in Q2R13) has, in general, shown improved performance. On a broader scale, the improvement is reflected in the recent Unit 2 capacity factor, which has been approximately 95% (for the period of December 1, 1995 to March 31, 1996).

- **No repeat equipment failures on equipment worked during Q2R13 or Q2F39.**

A review of major work for equipment worked during Q2R13 or Q2F39 found no repeat equipment failures.

- **Reduce operator workarounds to \leq thirty-three (33).**

Operator Workarounds have been reduced to thirty-two (32) as of April 27, 1996.

- **Zero (0) Technical Specification surveillances beyond critical date.**

There are zero (0) Technical Specification surveillances beyond critical date as of April 27, 1996.

- **Achieve 90% capacity factor for Unit 2.**

The commitment to achieve 90% Capacity Factor for Unit 2 was met by achieving a 94.7 capacity factor (for the period of December 1, 1995 to March 31, 1996). For the period of April 1, 1996 to April 23, 1996 this capacity factor was 95.4%. By extrapolating these figures, Unit 2's capacity factor will be greater than 90% for the month of April.

- **Maintain contaminated square footage for outage/non-outage at 20% / 5% respectively.**

The commitment to maintain contaminated square footage for outage / non-outage at 20% / 5% respectively was met with actual maximum outage/non-outage contaminated square footage of 15.1% / 4.5%.

**SIGNIFICANT PERFORMANCE RESULTS TO BE REALIZED
BY APRIL 30, 1996**

- **Process six hundred (600) maintenance actions using "Fix It Now" process.**

The Quad Cities "Fix-it-Now" team processed seven hundred twenty-one (721) maintenance actions as of April 8, 1996.

- **Maintain the Hydrogen Injection System on line greater than 90% of the time each respective unit is operating.**

The Hydrogen Injection System availability for Unit 1 was 90.2% during Operating Cycle 14. For Unit 2 which is currently in Operating Cycle 14, the Hydrogen Injection System availability has been 90.4% (as of April 1, 1996).

- **Maintain Fuel Reliability measurements at less than three hundred (300) microcuries/second as evidence of proper Foreign Material Exclusion (FME) control, new fuel receipt inspection and reactor water chemistry control.**

A new goal of less than three hundred (300) microcuries/second for fuel reliability was established in mid-1995. This goal would be exceeded with a single, typical fuel leak occurrence. Historically, Quad Cities has maintained this measured parameter at approximately twenty (20) microcuries/second. To ensure continued success, the following initiatives have been taken:

- ◇ Continued maintenance of conservative thermal margins
- ◇ Implementation of stringent FME requirements
- ◇ Continued stringent requirements for inspections in the fuel fabrication facility and for receipt inspection