



Illinois Emergency Management Agency  
Division of Nuclear Safety

Rod R. Blagojevich, Governor  
Andrew Velasquez III, Director  
Joseph G. Klinger, Acting Assistant Director

October 1, 2008

United States Nuclear Regulatory Commission - Region III  
Quad Cities Nuclear Station  
22710 206<sup>th</sup> Avenue North  
Cordova, IL 61242

Attention: Mr. James McGhee

SUBJECT: IEMA - Bureau of Nuclear Facility Safety, Inspection Report  
Quarterly Inspection Period: July 1 to September 30, 2008

Dear: Mr. McGhee,

On September 30, 2008 the Illinois Emergency Management Agency-Bureau of Nuclear Facility Safety Resident Inspector completed the quarterly inspection activities at the Quad Cities Nuclear Station, Units 1 and 2. Per the terms and conditions of the Memorandum of Understanding (MOU) between the NRC and IEMA-BNFS, the enclosed inspection report documents our agency's inspection issues and concerns that were previously discussed with you and members of your resident inspection staff.

The IEMA-BNFS inspection activities were conducted as they relate to nuclear safety and to compliance with the Commission's rules and regulations and with the conditions of the plant license. The inspector(s) reviewed selected licensee procedures and records, observed licensee activities, and interviewed licensee personnel.

Specifically, the inspection activities for this period focused on those inspection modules that were proposed to your NRC inspection staff as identified in the third quarter IEMA Inspection Plan and are disseminated within the text of the attached IEMA-BNFS Inspection Report.

Based on the results of this inspection, the inspectors identified the following IEMA-BNFS Open / Follow-up Items and are discussed within their respective report reference ( ):

1. The inspector issue regarding the Emergency Planning (EP) department procedures and NRC regulations related to notification to the shift manager



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of out of services of emergency sirens and why these would be treated differently from other plant equipment is considered an pen Item (40A2).

In addition, the following IEMA Inspector items that were being tracked by IEMA, are considered **Closed** to further review and are discussed within their respective report reference ( ):

1. The inspector's research into the spent fuel liner potential leakage issue is closed to an observation (1R20.1)

Any issues, open items and/or concerns that are discovered during the course the inspection period are normally entered into the IEMA – Bureau of Nuclear Facility Safety Plant Issues Matrix, and by this letter, are considered as disseminated to your NRC staff for disposition in accordance with NRC policies and procedures. In full cooperation with the and at the request of the NRC, IEMA-BNFS will continue to follow and assist the NRC Resident Inspection Staff with resolution and closure of all such issues, open items and/or concerns.

In full cooperation with and at the request of the NRC, IEMA-BNFS will continue to follow and assist the NRC Resident Inspection Staff with resolution and closure of all such issues and concerns.

If you have any questions, please contact me at your earliest convenience.

Sincerely yours,

Richard J. Zuffa  
IEMA-BNFS/RI Unit Supervisor  
Resident Inspection Staff

Docket Nos. 50-254; 50-265  
License Nos. DPR-29; DPR-30  
Enclosure(s): Inspection Report: 08QC-3QIR  
cc w/o encl: A.C. Settles, Chief Division of RICC  
C.H. Mathews, IEMA-BNFS-RI





by plant operations. Testing of safety systems was delayed until Sundays to prevent drawing this "dirty" water into heat exchangers. No reactor power reductions resulted from this dredging.

### Unit 1

Unit 1 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals.

On August 20 while Instrument Maintenance (IM) technicians were swapping out power supplies for the fire protection system, the fire protection deluge was initiated onto the feedwater regulation valve (FWRV) skid. The 1B FWRV logic control system locked up and the 1A FWRV transferred to its manual control logic. Operations personnel were able to gain manual control of the 1A FWRV and to maintain the unit at 100% power (Reference licensee IR 809047).

### Unit 2

Unit 2 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals. Additionally, a power reduction was performed on August 11 and 12, due to an Electro-Hydraulic Control (EHC) fluid leak on the #4 Turbine Control Valve.

## 1. **REACTOR SAFETY**

Initiating Events, Mitigating Systems, Barrier Integrity

### 1R01 Adverse Weather (IEMA Keystone: Reactor Safety) (71111.01)

#### a. Inspection Scope

The inspection focus was to verify that the plant design features and implementation of the licensee's procedures protect mitigating systems from adverse weather effects. Prior to adverse weather onsite, the inspector verified that mitigating strategies were in place and following seasonal and/or storm-related adverse weather conditions, verified that the site response was as directed by their procedures.

#### b. Observations and Findings

Throughout the inspection period the site experienced nine Thunderstorm Warnings, one Thunderstorm Watch, one Tornado Watch, and one Tornado Warning. During this time, the inspector reviewed licensee procedures QCOA 0010-10 rev 18, TORNADO WATCH / WARNING, SEVERE THUNDERSTORM WARNING, OR SEVERE WINDS, and OP-AA-108-111-1001 rev 3, SEVERE WEATHER AND NATURAL DISASTER GUIDELINES, to determine what was expected prior to and during abnormal weather events.

On August 20, the inspector toured outside areas of the plant verifying that the licensee took necessary pre-emptive actions to preclude loose objects from becoming potential missiles during high winds. No issues were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R04.1 Equipment Alignment (IEMA Keystone: Reactor Safety) (71111.04)

a. Inspection Scope

The inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Main Control Room and Back Panel Areas
- Unit 1&2 Reactor Feed Water Pump Rooms
- Unit 1&2 4 KV Buses (safety and non-safety)
- Unit 1&2 Condensate Pump Bays
- Unit 1&2 High Pressure Coolant Injection (HPCI) Rooms
- Unit 1&2 Residual Heat Removal Service Water (RHRSW) Pump Vaults
- Unit 1&2 Reactor Building Corner Pump Rooms
- Shutdown Makeup pump (SSMP) Room
- Unit 1&2 and Unit ½ Emergency Diesel Generator (EDG) Rooms
- Refuel Floor
- Unit 1&2 Station Blackout Diesel Generator rooms

b. Observations and Findings

During walk down inspections of plant equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

On August 12, 2008 the Unit 1 Station Black-Out (SBO) Diesel Generator (DG) was declared inoperable due to low oil level in the generator governor. On August 13, the inspector toured the three primary Diesel Generators (Unit 1, Unit 2 and ½ Diesel Generators) to determine if they had the same low governor oil level issue. The inspector did not identify any issues with these three DGs.

On August 20, the inspector monitored activities associated with dredging of the plant circulating water system intake bay. The inspector learned that there was appropriate operations department oversight at the dredging and from discussions with the Operations Manager, observed that safety significant heat exchangers were not tested during the 6 days per week that the dredging occurred, but were tested only when the dredging was secured to minimize the potential for intake of silt and debris into the heat exchangers. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R05 Fire Protection (IEMA Keystone: Reactor Safety) (71111.05)

a. Inspection Scope

The inspector evaluated the licensee's fire protection program for operational status, and material condition and verified the adequacy of:

- Controls for combustibles and ignition sources within the plant
- Fire detection and suppression capability
- Material condition of passive fire protection features

b. Observations and Findings

The inspector made several tours of the Quad Cities power block over the quarter and while on tour, verified compliance with the licensee's fire protection program per procedures OP-AA-201-004 rev 7, Fire Prevention for Hot Work, and OP-AA-201-009 rev 6, Control of Transient Combustible Material. Because the licensee had in the past identified issues with equipment or scaffolds that blocked access to fire protection equipment, the inspector paid particular attention to that potential, however no additional deficiencies were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R11 Licensed Operator Requalification Program (IEMA Keystone: Reactor Safety) (71111.11)

a. Inspection Scope

The inspector observed licensed operator training in the control room simulator to verify that the facility licensee's requalification program for licensed reactor operators (ROs) and senior reactor operators (SROs) ensured safe power plant operation by adequately evaluating how well the individual operators and crews mastered the training objectives, including training on high-risk operator actions. Performance of the utility evaluators was also evaluated to verify that they identified all appropriate training issues and enhancements.

b. Observations and Findings

On August 25, the inspector observed the graded examination of Crew C, Group 1, in the control room simulator. The exam scenario involved a loss of coolant leak that was designed to eventually lead the operating crew to depressurize the reactor; then re-flood with low pressure systems. The crew successfully handled the scenario with several minor issues. One issue for example, was an operator reading reactor water level from the Upper Wide Range instead of the Lower Wide Range, as directed. The operating crew corrected this issue themselves. In addition to the exam, the inspector attended the instructor pre-job brief and the post-exam debrief and verified that the licensee identified the issues brought forth by the inspector in addition to other minor issues. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R12 Maintenance Effectiveness (IEMA Keystone: Reactor Safety) (71111.12)

a. Inspection Scope

The inspector monitored the licensee's maintenance effectiveness including Maintenance Rule activities, work practices, extent of condition, common cause issues, and corrective actions to verify that the site appropriately addressed Structures, Systems, and Components (SSC) performance and condition problems.

b. Observations and Findings

Through out the quarter, the inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Unit 1&2 Reactor Building Corner Pump Rooms
- Unit 1, Unit 2, and Unit ½ EDG Rooms

During these walk-down inspections of maintenance rule equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R13 Maintenance Risk Assessment & Emergent Work Evaluation (IEMA Keystone: Reactor Safety) (71111.13)

a. Inspection Scope

The inspector monitored the licensee's on-line risk assessment on a continued basis.

b. Observations and Findings

The inspector monitored the on duty shift activities concerning risk assessment practices during scheduled plant maintenance and emergent work activities. The on-shift supervisors updated the on-line risk assessments to appropriate levels when plant conditions warranted and it was their practice to consult the Station Risk Coordinator in the event they encountered an equipment configuration not previously evaluated.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R20 Refuel and Outage Activities (IEMA Keystone: Reactor Safety) (71111.20)

a. Inspection Scope

**(Closed) Open Item 08QC-1QIR-004:** The inspector will continue to follow up on the spent fuel liner issue until the issue is resolved. This issue is therefore closed to an inspector observation.

b. Observations and Findings

On March 7, the inspector reviewed IR 745343 which described a 15 drops per minute (dpm) water leak from the NW corner of the Spent Fuel Pool liner. The IR concluded that the leak was acceptable because four Fuel Pool Cooling pumps were in operation at the time of the observed leak.

The inspector discussed this with the system engineer and was told that Unit 1 had a known leak when operating with four Fuel Pool Cooling pumps. The surveillance procedure, QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent Fuel Pool, and Drywell Liner Drains, used to monitor the liner flows has an acceptance criteria that states "NO evidence of running water in liner drains". IR 745343 was closed to trending with no further actions.

On March 11, the inspector was in the area of the pool liner drains and visually observed 12 of 18 of the liner drains for indication of flow. Six liner drains were in a High Radiation Area and were not accessible for

observation. Of the six drains on Unit 1, the liner drain flows were observed to be as follows:

- NW – pencil stream flow
- SW – ~30 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

Of the six drains on Unit 2, the liner drain flows are as follows:

- NW – 7 dpm; down from the IR identified 15 dpm
- SW – ~4 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

The inspector was shown an engineering justification from a previous licensee troubleshooting effort performed on Unit 1 that demonstrated that the Unit 1 leakage was from a leak in the Unit 1 scupper drain trough and would not have the capability to drain the spent fuel pool. There was no equivalent evaluation performed on Unit 2, as this was newly identified leakage.

Following inquiry by the inspector, the licensee's system engineer initiated a new incident report, IR 748333 to establish a complex troubleshooting plan to identify the location of the Unit 2 fuel pool liner leakage. The inspector reviewed the complex troubleshooting plan and found it to be ineffective because its Problem Statement made an incorrect assumption that pool liner leakage only occurred during 4 fuel pool cooling pump operation. During the outage following the March 7 discovery, the inspector noted the plant operating status for that day and recorded the liner drain flows. Fuel pool liner leakage dropped to <1 dpm with all 4 fuel pool cooling pumps in operation. Drain flow appeared to be more related to level in the reactor refueling cavity during vessel flooding operations. When the vessel cavity was drained flow dropped off, when the pool was full flow resumed. The licensee is currently considering this information for revision to their trouble shooting plan.

A secondary issue was associated with the licensee's surveillance performance and concerned a licensee engineer performing procedure QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent

Fuel Pool, and Drywell Liner Drains. The engineer considered the surveillance acceptable even though some of the data from the surveillance was outside the acceptance criteria. The engineer who performed this surveillance has recently accepted a position in the Communication department and is no longer performing engineering activities.

Due to the low safety significance of these two issues, the inspector will relay the as-found flow drain line leakage data observations to the licensee and will consider this open item closed to the observations as stated above.

1R22 Surveillance Testing (IEMA Keystone: Reactor Safety) (71111.22)

a. Inspection Scope

The inspector verified that surveillance testing of risk-significant systems, and components demonstrated that the equipment was capable of performing its intended safety function.

b. Observations and Findings

On August 25, 2008, the inspector reviewed the following completed surveillances performed to verify operability of the High Pressure Coolant Injection System. The surveillances reviewed were:

- QCOS 0005-04 rev 15, IST Valve Position Indication Surveillance,
- QCOS 2300-5 rev 63, Quarterly HPCI Pump Operability Test

The results of these surveillance tests were considered satisfactory by the inspector.

c. Conclusions

There were no significant issues identified during this inspection activity.

**2. RADIATION SAFETY**

2PS Public Radiation Safety

2PS3 Environmental Monitoring Program (REMP) and Radioactive Material Control Program: (IEMA Keystone: Public Radiation Safety) (71122.03)

a. Inspection Scope

The inspector performed a verification of the Radiological Environmental Monitoring Program (REMP) analyses with respect to its impact of radioactive effluent releases to the environment. The inspection was performed to validate the integrity of the radioactive gaseous and liquid effluent release program and to ensure that the licensee's surveys and controls are adequate to prevent the inadvertent release of uncontrolled radioactive contaminants into the public domain.

b. Observations and Findings

On September 23, 2008, the Illinois Environmental Protection Agency (IEPA) visited the Quad Cities Station for their quarterly joint inspection with IEMA. The following is an update of activities since the previous IEPA visit of June 10, 2008:

- The Tritium leak located on the Unit 1 Residual Heat Removal (RHR) underground suction line from the Clean Condensate Storage Tank (CCST) has been repaired. Currently the licensee is waiting to install a vent line in order to fully vent the line so they can perform a post-repair leak check.
- The wells immediately surrounding the service and turbine buildings show that the plume is still moving to the southwest until it reaches the plant discharge bay pilings, and then moves south.
- The latest sample results all show that the site perimeter wells have Tritium levels <200 pCi/L.

A review of IRs for the quarter regarding tritium activity and REMP sampling issues contained nothing noteworthy.

c. Conclusions

There were no significant issues identified during this inspection activity.

4 **ALL Cornerstones**

4OA2 Identification and Resolution of Problems: (IEMA Keystone: ALL) (71152)

a. Inspection Scope

The inspector reviewed corrective action documents to determine the licensee's compliance with NRC regulations regarding corrective action programs. The inspector verified that the licensee was identifying operator workarounds at an appropriate threshold and entering them in the corrective action program.

The inspector participated in the NRC biennial Problem Identification & Resolution (PI&R) inspection conducted July 21 through August 10. For this inspection, the inspector was assigned to investigate operations department related issues.

b. Observations and Findings

The inspector reviewed the majority of the Issue Reports (IRs) initiated during the quarter to assess whether the licensee was properly identifying issues. There were no noteworthy IRs identified that are not discussed elsewhere in this report.

The inspector reviewed the following Apparent Cause Reports:

- From IR 780748; Leak in line 1-1019-20"-AG causes tritium leakage into groundwater
- From IR 799082; 250 VDC Battery System Inoperable

The inspector reviewed each of the above documents in detail, discussed the documents with applicable site personnel, and reviewed the applicable governing documents, i.e. Technical Specifications, UFSAR, and 10CFR. No issues were found.

As a participating member of the NRC's biennial Problem Identification & Resolution (PI&R) inspection team, the inspector was assigned to investigate issues related to the operations department. The inspector reviewed in detail 31 IRs, 5 plant procedures, one Nuclear Over-Site audit, and two "Focused Area Self Assessments" (FASA).

The majority of the inspection activity accessed the problem resolution of issues in the clearance and tagging area where the site admittedly had problems in the past. The conclusion at the time of the PI&R inspection was that these errors were behind them due to effective corrective actions. Since the conclusion of the PI&R inspection, two clearance and tagging errors occurred at the facility within one week.

- On August 20, Instrument Maintenance IM technicians were swapping out batteries on a Fire Protection (FP) panel. A clearance order was in place but did not isolate the deluge piping actuation valve controlled

by this panel. During the battery replacement, the FP panel logic actuated and opened the deluge valve, wetting the Feedwater Regulating Valve (FWRV) skid, resulting in the lockup of the 1B FWRV and the transferring to manual of the 1A FWRV.

- On August 26, Electrical Maintenance (EM) technicians removed ground straps from the 1C Residual Heat Removal Service Water (RHRSW) pump while a Danger tag was attached to the ground straps.

On August 6, the inspector questioned the shift manager about the emergency siren that was out of service due to a storm in the area on August 4. The shift manager did not know of any out of service emergency sirens and called the Emergency Planning (EP) supervisor. The shift manager was informed by the EP Supervisor that one siren was out of service and that the shift manager had not been notified because less than 22% of the sirens were out of service. The inspector questioned this practice since the shift manager holds the highest authority operating license at the facility and should be aware of the status of malfunctioned safety equipment both on and offsite, especially those relating to the licensee's emergency preparedness capability. From the inspector's question, two IRs were initiated, IRs 804562 and 804563, to document the issue. The resolution to these IRs was that the status quo was appropriate and no change in reporting to the shift manager was necessary. The inspector will leave this as an **Open Item [08QC-3QIR-001]** to research further why this plant associated equipment would be treated differently in the PI&R process.

c. Conclusions

The inspector will further research the EP department procedures and NRC regulations related to notification to the shift manager of out of services of emergency sirens and why these would be treated differently from other plant equipment.

### INSPECTION PROCEDURES USED

The following procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

Inspection Procedure  
Number

Title

Section

IP 71111.01	Adverse Weather	R01
IP 71111-04	Equipment Alignment	R04
IP 71111-05	Fire Protection	R05
IP 71111-11	Licensed Operator Requalification Program	R11
IP 71111-12	Maintenance Effectiveness	R12
IP 71111-13	Maintenance Risk Assessments and Emergent Work Evaluation	R13
IP 71111-22	Surveillance Testing	R22
IP 71122-03	Environmental Monitoring Program (REMP) and Radioactive Material Control Program	PS3
IP 71152	Identification and Resolution of Problems	OA2

### **INSPECTION PROCEDURES NOT PERFORMED**

Due to participation in the NRC PI&R inspection and other inspector priorities, the following inspection modules were not completed this inspection period:

IP 71111-15	Operability Evaluations	R15
IP 71111-18	Plant Modifications	R18
IP 71111-19	Post Maintenance Testing	R19
IP 71121.01	Access Control to Radiologically Significant Areas	0S1
IP 71121.03	Radiation Monitoring Instrument	0S3

### **LIST OF ACRONYMS AND INITIALISMS USED IN REPORT**

10CFR	Title 10 Code of Federal Regulations
CCST	Clean Condensate Storage Tank
CS	Core Spray
Dpm/cm <sup>2</sup>	Disintegrations per minute per square centimeter
EC	Engineering Changes
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EHC	Electro-Hydraulic Control System
EMs	Electrical Maintenance Department workers
EP	Emergency Planning Department
FASA	Focused Area Self Assessments
FP	Fire Protection
FWRV	Feedwater Regulating Valve
HPCI	High Pressure Coolant Injection
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency

IR	Incident Report
IST	Inservice Testing
MWe	Mega-Watt Electric
NRC	Nuclear Regulatory Commission
QCOS	Quad Cities Operating Surveillance
OPS	Operations Department
PI&R	Problem Identification & Resolution
REMP	Radiological Effluent Monitoring Program
RHR	Residual Heat Removal System
RHRSW	Residual Heat Removal Service Water
SBO	Station Black Out
SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components
SSMP	Safe Shutdown Makeup pump
TS	Technical Specifications
TSC	Technical Support Center
U1, U2	Unit 1, Unit 2
UFSAR	Updated Final Safety Analysis Report
VDC	Volts Direct Current



by plant operations. Testing of safety systems was delayed until Sundays to prevent drawing this "dirty" water into heat exchangers. No reactor power reductions resulted from this dredging.

### Unit 1

Unit 1 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals.

On August 20 while Instrument Maintenance (IM) technicians were swapping out power supplies for the fire protection system, the fire protection deluge was initiated onto the feedwater regulation valve (FWRV) skid. The 1B FWRV logic control system locked up and the 1A FWRV transferred to its manual control logic. Operations personnel were able to gain manual control of the 1A FWRV and to maintain the unit at 100% power (Reference licensee IR 809047).

### Unit 2

Unit 2 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals. Additionally, a power reduction was performed on August 11 and 12, due to an Electro-Hydraulic Control (EHC) fluid leak on the #4 Turbine Control Valve.

## **1. REACTOR SAFETY**

Initiating Events, Mitigating Systems, Barrier Integrity

### **1R01 Adverse Weather (IEMA Keystone: Reactor Safety) (71111.01)**

#### **a. Inspection Scope**

The inspection focus was to verify that the plant design features and implementation of the licensee's procedures protect mitigating systems from adverse weather effects. Prior to adverse weather onsite, the inspector verified that mitigating strategies were in place and following seasonal and/or storm-related adverse weather conditions, verified that the site response was as directed by their procedures.

#### **b. Observations and Findings**

Throughout the inspection period the site experienced nine Thunderstorm Warnings, one Thunderstorm Watch, one Tornado Watch, and one Tornado Warning. During this time, the inspector reviewed licensee procedures QCOA 0010-10 rev 18, TORNADO WATCH / WARNING, SEVERE THUNDERSTORM WARNING, OR SEVERE WINDS, and OP-AA-108-111-1001 rev 3, SEVERE WEATHER AND NATURAL DISASTER GUIDELINES, to determine what was expected prior to and during abnormal weather events.

On August 20, the inspector toured outside areas of the plant verifying that the licensee took necessary pre-emptive actions to preclude loose objects from becoming potential missiles during high winds. No issues were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R04.1 Equipment Alignment (IEMA Keystone: Reactor Safety) (71111.04)

a. Inspection Scope

The inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Main Control Room and Back Panel Areas
- Unit 1&2 Reactor Feed Water Pump Rooms
- Unit 1&2 4 KV Buses (safety and non-safety)
- Unit 1&2 Condensate Pump Bays
- Unit 1&2 High Pressure Coolant Injection (HPCI) Rooms
- Unit 1&2 Residual Heat Removal Service Water (RHRSW) Pump Vaults
- Unit 1&2 Reactor Building Corner Pump Rooms
- Shutdown Makeup pump (SSMP) Room
- Unit 1&2 and Unit ½ Emergency Diesel Generator (EDG) Rooms
- Refuel Floor
- Unit 1&2 Station Blackout Diesel Generator rooms

b. Observations and Findings

During walk down inspections of plant equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

On August 12, 2008 the Unit 1 Station Black-Out (SBO) Diesel Generator (DG) was declared inoperable due to low oil level in the generator governor. On August 13, the inspector toured the three primary Diesel Generators (Unit 1, Unit 2 and ½ Diesel Generators) to determine if they had the same low governor oil level issue. The inspector did not identify any issues with these three DGs.

On August 20, the inspector monitored activities associated with dredging of the plant circulating water system intake bay. The inspector learned that there was appropriate operations department oversight at the dredging and from discussions with the Operations Manager, observed that safety significant heat exchangers were not tested during the 6 days per week that the dredging occurred, but were tested only when the dredging was secured to minimize the potential for intake of silt and debris into the heat exchangers. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R05 Fire Protection (IEMA Keystone: Reactor Safety) (71111.05)

a. Inspection Scope

The inspector evaluated the licensee's fire protection program for operational status, and material condition and verified the adequacy of:

- Controls for combustibles and ignition sources within the plant
- Fire detection and suppression capability
- Material condition of passive fire protection features

b. Observations and Findings

The inspector made several tours of the Quad Cities power block over the quarter and while on tour, verified compliance with the licensee's fire protection program per procedures OP-AA-201-004 rev 7, Fire Prevention for Hot Work, and OP-AA-201-009 rev 6, Control of Transient Combustible Material. Because the licensee had in the past identified issues with equipment or scaffolds that blocked access to fire protection equipment, the inspector paid particular attention to that potential, however no additional deficiencies were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R11 Licensed Operator Requalification Program (IEMA Keystone: Reactor Safety) (71111.11)

a. Inspection Scope

The inspector observed licensed operator training in the control room simulator to verify that the facility licensee's requalification program for licensed reactor operators (ROs) and senior reactor operators (SROs) ensured safe power plant operation by adequately evaluating how well the individual operators and crews mastered the training objectives, including training on high-risk operator actions. Performance of the utility evaluators was also evaluated to verify that they identified all appropriate training issues and enhancements.

b. Observations and Findings

On August 25, the inspector observed the graded examination of Crew C, Group 1, in the control room simulator. The exam scenario involved a loss of coolant leak that was designed to eventually lead the operating crew to depressurize the reactor; then re-flood with low pressure systems. The crew successfully handled the scenario with several minor issues. One issue for example, was an operator reading reactor water level from the Upper Wide Range instead of the Lower Wide Range, as directed. The operating crew corrected this issue themselves. In addition to the exam, the inspector attended the instructor pre-job brief and the post-exam debrief and verified that the licensee identified the issues brought forth by the inspector in addition to other minor issues. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R12 Maintenance Effectiveness (IEMA Keystone: Reactor Safety) (71111.12)

a. Inspection Scope

The inspector monitored the licensee's maintenance effectiveness including Maintenance Rule activities, work practices, extent of condition, common cause issues, and corrective actions to verify that the site appropriately addressed Structures, Systems, and Components (SSC) performance and condition problems.

b. Observations and Findings

Through out the quarter, the inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Unit 1&2 Reactor Building Corner Pump Rooms
- Unit 1, Unit 2, and Unit ½ EDG Rooms

During these walk-down inspections of maintenance rule equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R13 Maintenance Risk Assessment & Emergent Work Evaluation (IEMA Keystone: Reactor Safety) (71111.13)

a. Inspection Scope

The inspector monitored the licensee's on-line risk assessment on a continued basis.

b. Observations and Findings

The inspector monitored the on duty shift activities concerning risk assessment practices during scheduled plant maintenance and emergent work activities. The on-shift supervisors updated the on-line risk assessments to appropriate levels when plant conditions warranted and it was their practice to consult the Station Risk Coordinator in the event they encountered an equipment configuration not previously evaluated.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R20 Refuel and Outage Activities (IEMA Keystone: Reactor Safety) (71111.20)

a. Inspection Scope

**(Closed) Open Item 08QC-1QIR-004:** The inspector will continue to follow up on the spent fuel liner issue until the issue is resolved. This issue is therefore closed to an inspector observation.

b. Observations and Findings

On March 7, the inspector reviewed IR 745343 which described a 15 drops per minute (dpm) water leak from the NW corner of the Spent Fuel Pool liner. The IR concluded that the leak was acceptable because four Fuel Pool Cooling pumps were in operation at the time of the observed leak.

The inspector discussed this with the system engineer and was told that Unit 1 had a known leak when operating with four Fuel Pool Cooling pumps. The surveillance procedure, QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent Fuel Pool, and Drywell Liner Drains, used to monitor the liner flows has an acceptance criteria that states "NO evidence of running water in liner drains". IR 745343 was closed to trending with no further actions.

On March 11, the inspector was in the area of the pool liner drains and visually observed 12 of 18 of the liner drains for indication of flow. Six liner drains were in a High Radiation Area and were not accessible for

observation. Of the six drains on Unit 1, the liner drain flows were observed to be as follows:

- NW – pencil stream flow
- SW – ~30 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

Of the six drains on Unit 2, the liner drain flows are as follows:

- NW – 7 dpm; down from the IR identified 15 dpm
- SW – ~4 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

The inspector was shown an engineering justification from a previous licensee troubleshooting effort performed on Unit 1 that demonstrated that the Unit 1 leakage was from a leak in the Unit 1 scupper drain trough and would not have the capability to drain the spent fuel pool. There was no equivalent evaluation performed on Unit 2, as this was newly identified leakage.

Following inquiry by the inspector, the licensee's system engineer initiated a new incident report, IR 748333 to establish a complex troubleshooting plan to identify the location of the Unit 2 fuel pool liner leakage. The inspector reviewed the complex troubleshooting plan and found it to be ineffective because its Problem Statement made an incorrect assumption that pool liner leakage only occurred during 4 fuel pool cooling pump operation. During the outage following the March 7 discovery, the inspector noted the plant operating status for that day and recorded the liner drain flows. Fuel pool liner leakage dropped to <1 dpm with all 4 fuel pool cooling pumps in operation. Drain flow appeared to be more related to level in the reactor refueling cavity during vessel flooding operations. When the vessel cavity was drained flow dropped off, when the pool was full flow resumed. The licensee is currently considering this information for revision to their trouble shooting plan.

A secondary issue was associated with the licensee's surveillance performance and concerned a licensee engineer performing procedure QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent

Fuel Pool, and Drywell Liner Drains. The engineer considered the surveillance acceptable even though some of the data from the surveillance was outside the acceptance criteria. The engineer who performed this surveillance has recently accepted a position in the Communication department and is no longer performing engineering activities.

Due to the low safety significance of these two issues, the inspector will relay the as-found flow drain line leakage data observations to the licensee and will consider this open item closed to the observations as stated above.

1R22 Surveillance Testing (IEMA Keystone: Reactor Safety) (71111.22)

a. Inspection Scope

The inspector verified that surveillance testing of risk-significant systems, and components demonstrated that the equipment was capable of performing its intended safety function.

b. Observations and Findings

On August 25, 2008, the inspector reviewed the following completed surveillances performed to verify operability of the High Pressure Coolant Injection System. The surveillances reviewed were:

- QCOS 0005-04 rev 15, IST Valve Position Indication Surveillance,
- QCOS 2300-5 rev 63, Quarterly HPCI Pump Operability Test

The results of these surveillance tests were considered satisfactory by the inspector.

c. Conclusions

There were no significant issues identified during this inspection activity.

**2. RADIATION SAFETY**

2PS Public Radiation Safety

2PS3 Environmental Monitoring Program (REMP) and Radioactive Material Control Program: (IEMA Keystone: Public Radiation Safety) (71122.03)

a. Inspection Scope

The inspector performed a verification of the Radiological Environmental Monitoring Program (REMP) analyses with respect to its impact of radioactive effluent releases to the environment. The inspection was performed to validate the integrity of the radioactive gaseous and liquid effluent release program and to ensure that the licensee's surveys and controls are adequate to prevent the inadvertent release of uncontrolled radioactive contaminants into the public domain.

b. Observations and Findings

On September 23, 2008, the Illinois Environmental Protection Agency (IEPA) visited the Quad Cities Station for their quarterly joint inspection with IEMA. The following is an update of activities since the previous IEPA visit of June 10, 2008:

- The Tritium leak located on the Unit 1 Residual Heat Removal (RHR) underground suction line from the Clean Condensate Storage Tank (CCST) has been repaired. Currently the licensee is waiting to install a vent line in order to fully vent the line so they can perform a post-repair leak check.
- The wells immediately surrounding the service and turbine buildings show that the plume is still moving to the southwest until it reaches the plant discharge bay pilings, and then moves south.
- The latest sample results all show that the site perimeter wells have Tritium levels <200 pCi/L.

A review of IRs for the quarter regarding tritium activity and REMF sampling issues contained nothing noteworthy.

c. Conclusions

There were no significant issues identified during this inspection activity.

**4 ALL Cornerstones**

40A2 Identification and Resolution of Problems: (IEMA Keystone: ALL) (71152)

a. Inspection Scope

The inspector reviewed corrective action documents to determine the licensee's compliance with NRC regulations regarding corrective action programs. The inspector verified that the licensee was identifying operator workarounds at an appropriate threshold and entering them in the corrective action program.

The inspector participated in the NRC biennial Problem Identification & Resolution (PI&R) inspection conducted July 21 through August 10. For this inspection, the inspector was assigned to investigate operations department related issues.

b. Observations and Findings

The inspector reviewed the majority of the Issue Reports (IRs) initiated during the quarter to assess whether the licensee was properly identifying issues. There were no noteworthy IRs identified that are not discussed elsewhere in this report.

The inspector reviewed the following Apparent Cause Reports:

- From IR 780748; Leak in line 1-1019-20"-AG causes tritium leakage into groundwater
- From IR 799082; 250 VDC Battery System Inoperable

The inspector reviewed each of the above documents in detail, discussed the documents with applicable site personnel, and reviewed the applicable governing documents, i.e. Technical Specifications, UFSAR, and 10CFR. No issues were found.

As a participating member of the NRC's biennial Problem Identification & Resolution (PI&R) inspection team, the inspector was assigned to investigate issues related to the operations department. The inspector reviewed in detail 31 IRs, 5 plant procedures, one Nuclear Over-Site audit, and two "Focused Area Self Assessments" (FASA).

The majority of the inspection activity accessed the problem resolution of issues in the clearance and tagging area where the site admittedly had problems in the past. The conclusion at the time of the PI&R inspection was that these errors were behind them due to effective corrective actions. Since the conclusion of the PI&R inspection, two clearance and tagging errors occurred at the facility within one week.

- On August 20, Instrument Maintenance IM technicians were swapping out batteries on a Fire Protection (FP) panel. A clearance order was in place but did not isolate the deluge piping actuation valve controlled

by this panel. During the battery replacement, the FP panel logic actuated and opened the deluge valve, wetting the Feedwater Regulating Valve (FWRV) skid, resulting in the lockup of the 1B FWRV and the transferring to manual of the 1A FWRV.

- On August 26, Electrical Maintenance (EM) technicians removed ground straps from the 1C Residual Heat Removal Service Water (RHRSW) pump while a Danger tag was attached to the ground straps.

On August 6, the inspector questioned the shift manager about the emergency siren that was out of service due to a storm in the area on August 4. The shift manager did not know of any out of service emergency sirens and called the Emergency Planning (EP) supervisor. The shift manager was informed by the EP Supervisor that one siren was out of service and that the shift manager had not been notified because less than 22% of the sirens were out of service. The inspector questioned this practice since the shift manager holds the highest authority operating license at the facility and should be aware of the status of malfunctioned safety equipment both on and offsite, especially those relating to the licensee's emergency preparedness capability. From the inspector's question, two IRs were initiated, IRs 804562 and 804563, to document the issue. The resolution to these IRs was that the status quo was appropriate and no change in reporting to the shift manager was necessary. The inspector will leave this as an **Open Item [08QC-3QIR-001]** to research further why this plant associated equipment would be treated differently in the PI&R process.

c. Conclusions

The inspector will further research the EP department procedures and NRC regulations related to notification to the shift manager of out of services of emergency sirens and why these would be treated differently from other plant equipment.

### INSPECTION PROCEDURES USED

The following procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

Inspection Procedure  
Number

Title

Section

IP 71111.01	Adverse Weather	R01
IP 71111-04	Equipment Alignment	R04
IP 71111-05	Fire Protection	R05
IP 71111-11	Licensed Operator Requalification Program	R11
IP 71111-12	Maintenance Effectiveness	R12
IP 71111-13	Maintenance Risk Assessments and Emergent Work Evaluation	R13
IP 71111-22	Surveillance Testing	R22
IP 71122-03	Environmental Monitoring Program (REMP) and Radioactive Material Control Program	PS3
IP 71152	Identification and Resolution of Problems	OA2

### **INSPECTION PROCEDURES NOT PERFORMED**

Due to participation in the NRC PI&R inspection and other inspector priorities, the following inspection modules were not completed this inspection period:

IP 71111-15	Operability Evaluations	R15
IP 71111-18	Plant Modifications	R18
IP 71111-19	Post Maintenance Testing	R19
IP 71121.01	Access Control to Radiologically Significant Areas	0S1
IP 71121.03	Radiation Monitoring Instrument	0S3

### **LIST OF ACRONYMS AND INITIALISMS USED IN REPORT**

10CFR	Title 10 Code of Federal Regulations
CCST	Clean Condensate Storage Tank
CS	Core Spray
Dpm/cm <sup>2</sup>	Disintegrations per minute per square centimeter
EC	Engineering Changes
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EHC	Electro-Hydraulic Control System
EMs	Electrical Maintenance Department workers
EP	Emergency Planning Department
FASA	Focused Area Self Assessments
FP	Fire Protection
FWRV	Feedwater Regulating Valve
HPCI	High Pressure Coolant Injection
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency

IR	Incident Report
IST	Inservice Testing
MWe	Mega-Watt Electric
NRC	Nuclear Regulatory Commission
QCOS	Quad Cities Operating Surveillance
OPS	Operations Department
PI&R	Problem Identification & Resolution
REMP	Radiological Effluent Monitoring Program
RHR	Residual Heat Removal System
RHRSW	Residual Heat Removal Service Water
SBO	Station Black Out
SRO	Senior Reactor Operator
SSC	Structures, Systems, and Components
SSMP	Safe Shutdown Makeup pump
TS	Technical Specifications
TSC	Technical Support Center
U1, U2	Unit 1, Unit 2
UFSAR	Updated Final Safety Analysis Report
VDC	Volts Direct Current



by plant operations. Testing of safety systems was delayed until Sundays to prevent drawing this "dirty" water into heat exchangers. No reactor power reductions resulted from this dredging.

### Unit 1

Unit 1 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals.

On August 20 while Instrument Maintenance (IM) technicians were swapping out power supplies for the fire protection system, the fire protection deluge was initiated onto the feedwater regulation valve (FWRV) skid. The 1B FWRV logic control system locked up and the 1A FWRV transferred to its manual control logic. Operations personnel were able to gain manual control of the 1A FWRV and to maintain the unit at 100% power (Reference licensee IR 809047).

### Unit 2

Unit 2 operated the entire inspection period at near full rated electrical load of 912 MWe, with the following exceptions. Small power reductions were performed as required to facilitate planned control rod maintenance activities and condenser flow reversals. Additionally, a power reduction was performed on August 11 and 12, due to an Electro-Hydraulic Control (EHC) fluid leak on the #4 Turbine Control Valve.

## **1. REACTOR SAFETY**

Initiating Events, Mitigating Systems, Barrier Integrity

### **1R01 Adverse Weather (IEMA Keystone: Reactor Safety) (71111.01)**

#### **a. Inspection Scope**

The inspection focus was to verify that the plant design features and implementation of the licensee's procedures protect mitigating systems from adverse weather effects. Prior to adverse weather onsite, the inspector verified that mitigating strategies were in place and following seasonal and/or storm-related adverse weather conditions, verified that the site response was as directed by their procedures.

#### **b. Observations and Findings**

Throughout the inspection period the site experienced nine Thunderstorm Warnings, one Thunderstorm Watch, one Tornado Watch, and one Tornado Warning. During this time, the inspector reviewed licensee procedures QCOA 0010-10 rev 18, TORNADO WATCH / WARNING, SEVERE THUNDERSTORM WARNING, OR SEVERE WINDS, and OP-AA-108-111-1001 rev 3, SEVERE WEATHER AND NATURAL DISASTER GUIDELINES, to determine what was expected prior to and during abnormal weather events.

On August 20, the inspector toured outside areas of the plant verifying that the licensee took necessary pre-emptive actions to preclude loose objects from becoming potential missiles during high winds. No issues were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R04.1 Equipment Alignment (IEMA Keystone: Reactor Safety) (71111.04)

a. Inspection Scope

The inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Main Control Room and Back Panel Areas
- Unit 1&2 Reactor Feed Water Pump Rooms
- Unit 1&2 4 KV Buses (safety and non-safety)
- Unit 1&2 Condensate Pump Bays
- Unit 1&2 High Pressure Coolant Injection (HPCI) Rooms
- Unit 1&2 Residual Heat Removal Service Water (RHRSW) Pump Vaults
- Unit 1&2 Reactor Building Corner Pump Rooms
- Shutdown Makeup pump (SSMP) Room
- Unit 1&2 and Unit ½ Emergency Diesel Generator (EDG) Rooms
- Refuel Floor
- Unit 1&2 Station Blackout Diesel Generator rooms

b. Observations and Findings

During walk down inspections of plant equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

On August 12, 2008 the Unit 1 Station Black-Out (SBO) Diesel Generator (DG) was declared inoperable due to low oil level in the generator governor. On August 13, the inspector toured the three primary Diesel Generators (Unit 1, Unit 2 and ½ Diesel Generators) to determine if they had the same low governor oil level issue. The inspector did not identify any issues with these three DGs.

On August 20, the inspector monitored activities associated with dredging of the plant circulating water system intake bay. The inspector learned that there was appropriate operations department oversight at the dredging and from discussions with the Operations Manager, observed that safety significant heat exchangers were not tested during the 6 days per week that the dredging occurred, but were tested only when the dredging was secured to minimize the potential for intake of silt and debris into the heat exchangers. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R05 Fire Protection (IEMA Keystone: Reactor Safety) (71111.05)

a. Inspection Scope

The inspector evaluated the licensee's fire protection program for operational status, and material condition and verified the adequacy of:

- Controls for combustibles and ignition sources within the plant
- Fire detection and suppression capability
- Material condition of passive fire protection features

b. Observations and Findings

The inspector made several tours of the Quad Cities power block over the quarter and while on tour, verified compliance with the licensee's fire protection program per procedures OP-AA-201-004 rev 7, Fire Prevention for Hot Work, and OP-AA-201-009 rev 6, Control of Transient Combustible Material. Because the licensee had in the past identified issues with equipment or scaffolds that blocked access to fire protection equipment, the inspector paid particular attention to that potential, however no additional deficiencies were identified.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R11 Licensed Operator Requalification Program (IEMA Keystone: Reactor Safety) (71111.11)

a. Inspection Scope

The inspector observed licensed operator training in the control room simulator to verify that the facility licensee's requalification program for licensed reactor operators (ROs) and senior reactor operators (SROs) ensured safe power plant operation by adequately evaluating how well the individual operators and crews mastered the training objectives, including training on high-risk operator actions. Performance of the utility evaluators was also evaluated to verify that they identified all appropriate training issues and enhancements.

b. Observations and Findings

On August 25, the inspector observed the graded examination of Crew C, Group 1, in the control room simulator. The exam scenario involved a loss of coolant leak that was designed to eventually lead the operating crew to depressurize the reactor; then re-flood with low pressure systems. The crew successfully handled the scenario with several minor issues. One issue for example, was an operator reading reactor water level from the Upper Wide Range instead of the Lower Wide Range, as directed. The operating crew corrected this issue themselves. In addition to the exam, the inspector attended the instructor pre-job brief and the post-exam debrief and verified that the licensee identified the issues brought forth by the inspector in addition to other minor issues. The inspector did not identify any issues with this activity.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R12 Maintenance Effectiveness (IEMA Keystone: Reactor Safety) (71111.12)

a. Inspection Scope

The inspector monitored the licensee's maintenance effectiveness including Maintenance Rule activities, work practices, extent of condition, common cause issues, and corrective actions to verify that the site appropriately addressed Structures, Systems, and Components (SSC) performance and condition problems.

b. Observations and Findings

Through out the quarter, the inspector performed equipment configuration alignment and general area inspections in the following plant areas:

- Unit 1&2 Reactor Building Corner Pump Rooms
- Unit 1, Unit 2, and Unit ½ EDG Rooms

During these walk-down inspections of maintenance rule equipment areas, the inspector verified equipment configuration and observed for any material condition deficiencies that could prevent proper equipment operation. Equipment areas were inspected for system leakage, personnel safety hazards, potential interference with system components and controls, fire hazards, water intrusion, and the integrity of system structural supports. The inspector monitored equipment areas for abnormal vibration, odors, sounds, or other conditions that could impact proper equipment operation and plant safety.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R13 Maintenance Risk Assessment & Emergent Work Evaluation (IEMA Keystone: Reactor Safety) (71111.13)

a. Inspection Scope

The inspector monitored the licensee's on-line risk assessment on a continued basis.

b. Observations and Findings

The inspector monitored the on duty shift activities concerning risk assessment practices during scheduled plant maintenance and emergent work activities. The on-shift supervisors updated the on-line risk assessments to appropriate levels when plant conditions warranted and it was their practice to consult the Station Risk Coordinator in the event they encountered an equipment configuration not previously evaluated.

c. Conclusions

There were no significant issues identified during this inspection activity.

1R20 Refuel and Outage Activities (IEMA Keystone: Reactor Safety) (71111.20)

a. Inspection Scope

(Closed) Open Item 08QC-1QIR-004: The inspector will continue to follow up on the spent fuel liner issue until the issue is resolved. This issue is therefore closed to an inspector observation.

b. Observations and Findings

On March 7, the inspector reviewed IR 745343 which described a 15 drops per minute (dpm) water leak from the NW corner of the Spent Fuel Pool liner. The IR concluded that the leak was acceptable because four Fuel Pool Cooling pumps were in operation at the time of the observed leak.

The inspector discussed this with the system engineer and was told that Unit 1 had a known leak when operating with four Fuel Pool Cooling pumps. The surveillance procedure, QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent Fuel Pool, and Drywell Liner Drains, used to monitor the liner flows has an acceptance criteria that states "NO evidence of running water in liner drains". IR 745343 was closed to trending with no further actions.

On March 11, the inspector was in the area of the pool liner drains and visually observed 12 of 18 of the liner drains for indication of flow. Six liner drains were in a High Radiation Area and were not accessible for

observation. Of the six drains on Unit 1, the liner drain flows were observed to be as follows:

- NW – pencil stream flow
- SW – ~30 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

Of the six drains on Unit 2, the liner drain flows are as follows:

- NW – 7 dpm; down from the IR identified 15 dpm
- SW – ~4 dpm
- Drain 4 – 0
- Drain 3 – 0
- Drain 2 – 0
- Drain 1 – 0 > but < 1 dpm

The inspector was shown an engineering justification from a previous licensee troubleshooting effort performed on Unit 1 that demonstrated that the Unit 1 leakage was from a leak in the Unit 1 scupper drain trough and would not have the capability to drain the spent fuel pool. There was no equivalent evaluation performed on Unit 2, as this was newly identified leakage.

Following inquiry by the inspector, the licensee's system engineer initiated a new incident report, IR 748333 to establish a complex troubleshooting plan to identify the location of the Unit 2 fuel pool liner leakage. The inspector reviewed the complex troubleshooting plan and found it to be ineffective because its Problem Statement made an incorrect assumption that pool liner leakage only occurred during 4 fuel pool cooling pump operation. During the outage following the March 7 discovery, the inspector noted the plant operating status for that day and recorded the liner drain flows. Fuel pool liner leakage dropped to <1 dpm with all 4 fuel pool cooling pumps in operation. Drain flow appeared to be more related to level in the reactor refueling cavity during vessel flooding operations. When the vessel cavity was drained flow dropped off, when the pool was full flow resumed. The licensee is currently considering this information for revision to their trouble shooting plan.

A secondary issue was associated with the licensee's surveillance performance and concerned a licensee engineer performing procedure QCTS 0820-11 revision 2, Surveillance of Dryer-Separator Pool, Spent

Fuel Pool, and Drywell Liner Drains. The engineer considered the surveillance acceptable even though some of the data from the surveillance was outside the acceptance criteria. The engineer who performed this surveillance has recently accepted a position in the Communication department and is no longer performing engineering activities.

Due to the low safety significance of these two issues, the inspector will relay the as-found flow drain line leakage data observations to the licensee and will consider this open item closed to the observations as stated above.

1R22 Surveillance Testing (IEMA Keystone: Reactor Safety) (71111.22)

a. Inspection Scope

The inspector verified that surveillance testing of risk-significant systems, and components demonstrated that the equipment was capable of performing its intended safety function.

b. Observations and Findings

On August 25, 2008, the inspector reviewed the following completed surveillances performed to verify operability of the High Pressure Coolant Injection System. The surveillances reviewed were:

- QCOS 0005-04 rev 15, IST Valve Position Indication Surveillance,
- QCOS 2300-5 rev 63, Quarterly HPCI Pump Operability Test

The results of these surveillance tests were considered satisfactory by the inspector.

c. Conclusions

There were no significant issues identified during this inspection activity.

**2. RADIATION SAFETY**

2PS Public Radiation Safety

2PS3 Environmental Monitoring Program (REMP) and Radioactive Material Control Program: (IEMA Keystone: Public Radiation Safety) (71122.03)

a. Inspection Scope

The inspector performed a verification of the Radiological Environmental Monitoring Program (REMP) analyses with respect to its impact of radioactive effluent releases to the environment. The inspection was performed to validate the integrity of the radioactive gaseous and liquid effluent release program and to ensure that the licensee's surveys and controls are adequate to prevent the inadvertent release of uncontrolled radioactive contaminants into the public domain.

b. Observations and Findings

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- The Tritium leak located on the Unit 1 Residual Heat Removal (RHR) underground suction line from the Clean Condensate Storage Tank (CCST) has been repaired. Currently the licensee is waiting to install a vent line in order to fully vent the line so they can perform a post-repair leak check.
- The wells immediately surrounding the service and turbine buildings show that the plume is still moving to the southwest until it reaches the plant discharge bay pilings, and then moves south.
- The latest sample results all show that the site perimeter wells have Tritium levels <200 pCi/L.

A review of IRs for the quarter regarding tritium activity and REMP sampling issues contained nothing noteworthy.

c. Conclusions

There were no significant issues identified during this inspection activity.

**4 ALL Cornerstones**

40A2 Identification and Resolution of Problems: (IEMA Keystone: ALL) (71152)

a. Inspection Scope

The inspector reviewed corrective action documents to determine the licensee's compliance with NRC regulations regarding corrective action programs. The inspector verified that the licensee was identifying operator workarounds at an appropriate threshold and entering them in the corrective action program.

The inspector participated in the NRC biennial Problem Identification & Resolution (PI&R) inspection conducted July 21 through August 10. For this inspection, the inspector was assigned to investigate operations department related issues.

b. Observations and Findings

The inspector reviewed the majority of the Issue Reports (IRs) initiated during the quarter to assess whether the licensee was properly identifying issues. There were no noteworthy IRs identified that are not discussed elsewhere in this report.

The inspector reviewed the following Apparent Cause Reports:

- From IR 780748; Leak in line 1-1019-20"-AG causes tritium leakage into groundwater
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The majority of the inspection activity accessed the problem resolution of issues in the clearance and tagging area where the site admittedly had problems in the past. The conclusion at the time of the PI&R inspection was that these errors were behind them due to effective corrective actions. Since the conclusion of the PI&R inspection, two clearance and tagging errors occurred at the facility within one week.

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c. Conclusions

The inspector will further research the EP department procedures and NRC regulations related to notification to the shift manager of out of services of emergency sirens and why these would be treated differently from other plant equipment.

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IP 71152	Identification and Resolution of Problems	OA2

### **INSPECTION PROCEDURES NOT PERFORMED**

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