

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No: 50-331/99013(DRS)

Licensee: Alliant, IES Utilities Inc.

Facility: Duane Arnold Energy Center

Location: Palo, Iowa

Dates: November 8-9, 1999 and November 15-17, 1999

Inspector: D. Nelson, Radiation Specialist

Approved by: Steven K. Orth, Acting Chief, Plant Support Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Duane Arnold Energy Center (DAEC) NRC Inspection Report 50-331/99013(DRS)

This routine, announced inspection evaluated the effectiveness of the licensee's radiation protection program during refueling outage 16. The inspection focused on dose management and implementation of the as-low-as-is-reasonably-achievable (ALARA) program, the control and oversight of radiological work, radiation worker (radworker) performance, and source term reduction initiatives. The following conclusions were made in these areas:

Plant Support

- The radiation protection department was actively involved in the work planning process. Implementation of dose reduction and ALARA initiatives kept dose well within outage goals. Good oversight of radiological activities contributed to maintaining outage dose reasonably low given the overall scope of work. (Section R1.1)
- The pre-job briefings provided to quality control inspectors prior to inspections of the N2B recirculation nozzle were not adequate and resulted in 600 millirem of unnecessary dose. In addition, a fact finding meeting held after the second entry had not fully established the "facts" about the first two entries before granting permission for the third entry, which may have contributed to this unnecessary dose. (Section R1.1)
- The ALARA program was implemented effectively, as ALARA plans were well developed and sufficiently thorough. Dose reduction initiatives and associated engineering controls were properly established, and efforts to limit personnel contamination events were successful. (Section R1.2)
- Radiation protection (RP) staff oversight and control of radiological work, and management of RP resources for the outage were effective. (Section R1.3)
- Source term reduction strategies continued to be implemented effectively. (Section R1.4)
- Radworker performance met or exceeded management's expectations. (Section R4.1)
- A potential generic issue involving the mishandling of contaminated trash had not been addressed in the corrective action program. (Section R4.1)
- Radiological postings were well maintained and accurately reflected the area radiological conditions. High and locked high radiation areas were controlled consistent with station procedures and regulatory requirements. Appropriate contamination control practices were used at job sites, resulting in fewer than expected contamination events. (Section R4.2)

- Outage staffing and training for the RP program was effective. Training of the contract RP staff adequately prepared them for their assigned outage tasks. (Section R5.1)
- The outage RP organization's oversight contributed to the effectiveness of the program. (Section R6.1)
- Quality Assurance (QA) assessment activities for the outage were well planned and staffed by qualified individuals. (Section R7.1)

Report Details

IV. Plant Support

R1 Radiation Protection and Chemistry Controls

R1.1 Radiological Planning for Refueling Outage 16

a. Inspection Scope (83750)

The inspector reviewed the radiological planning and dose goal development for the planned 37-day refueling outage 16. The review consisted of discussions with the Radiation Protection Manager (RPM) and the Health Physics Supervisor as well as reviews of planned outage work scope and scope expansion issues, dose projections, work scheduling information and planning practices, and observations of work control processes throughout the station.

b. Observations and Findings

Following the 1996 refueling outage, the licensee made several significant changes in outage planning and the management of outage activities. To more effectively plan outage work, major outage activities were assigned a Project Leader and a Technical Leader, and each activity was given a specific project designator. The leaders, planners, and craft personnel from the maintenance shop attended all planning meetings, coordinated all planning activities and were the in-field supervisors for their projects during the outage. To enhance in-house ownership of outage activities, the role of primary craft brokers was significantly changed. The licensee opted to have the contract craft report to the utility craft shop, i.e., the utility's maintenance craft personnel were now the supervisors of the contract craft.

Prior to refueling outage 15, the radiation protection (RP) Planner was responsible for all outage RP planning. The Planner attended all of the planning meetings to gain a big picture understanding of the outage and to assist with working out conflicts between projects during schedule development. The RP Planner ensured that all RP work plans were developed around the project designators and that radiation work permits (RWPs) addressed specific projects. The RP planner coordinated all As-Low-As-Is-Reasonably-Achievable (ALARA) planning through Outage Management and attended all briefings and post-task meetings with the craft and was actively involved in project scheduling. Following refueling outage 15, the responsibility for specific projects was divided among selected senior health physics technicians (HPT). The technicians assumed all of the responsibilities of the RP Planner for their individual projects. An independent reviewer with ALARA experience was also assigned to each project to oversee the technician's work. The reviewer assessed the technician's ALARA reviews, reviewed each project's RWPs and provided in-field oversight as each project proceeded. This change was seen as a means to developing the technician's ALARA planning skills as well as a way to enhance project ownership among members of the RP staff.

In the nine months prior to outage 16, three rounds of meetings were held with all of the project leads and the lead HPTs. Dose estimates were generated from job history files, plant radiological information and industry data. Work packages were generated by the lead HPT's and reviewed by the independent reviewers. If, during the outage, dose significant emergent or rework issues arose, RP management assigned a senior HPT with ALARA experience to the project. The assigned HPT was responsible for coordinating RP planning efforts with outage management to ensure that radiological aspects of the job were evaluated prior to initiation.

The inspector found that, in general, the interface between the work control organization and the RP group worked well for routine outage activities. The appropriate radiological involvement in job planning was maintained throughout the outage, and the radiological impact of proposed activities was considered before work was directed to take place.

The licensee's dose goal for refueling outage 16 was 160 rem, a reasonable goal given the scope of radiological work activities. Radiologically significant outage activities included drywell inservice inspection (ISI) (initially estimated at 23 rem), shielding installation and removal (4.9 rem), the replacement of approximately 150 snubbers (12.5 rem), and refueling floor activities (15.7 rem). With the exception of the snubber replacement work, each of these activities had routinely been performed during previous outages.

For the first 27 days of the planned 37-day outage, the total dose expended was approximately 120 rem. Many of the major projects had been completed. While most projects had tracked close to the original dose budget, several were significantly under budget. Those projects that were significantly under budget or projected to be significantly under budget included shielding activities, operations support activities, work on the coolers, motor operated valve work, and refueling activities. Several of the projects were as much as 50 percent under budget. RP management indicated that, following the outage, an investigation would be conducted to determine the causes for the inaccurate dose estimates. RP management speculated that enhanced training and the increased use of cameras may have contributed to the lower dose.

During the later stages of the outage, cracks were found in welds on the N2B and N2D reactor recirculation riser nozzles. Work to inspect and repair those cracks resulted in approximately 54 rem of dose. Without this additional dose, total dose for refueling outage 16 would have been 106 rem or approximately 54 rem under budget. The inspector found that aggressive dose management practices, the ALARA and source term reduction initiatives implemented during the outage, and the RP staff's control and oversight of radiological work significantly benefitted dose performance.

During reviews of the action requests (ARs), the inspector noted that two of the ARs had been generated to address quality control (QC) inspections of the cracks on the N2B recirculation nozzle. In preparation for the N2B weld overlay repair work, a QC inspector entered the drywell on November 8, 1999, and obtained weld buttering thickness measurements on the N2B recirculation nozzle. The QC inspector and the HPT covering the entry received about 260 mrem during the entry. It was subsequently determined that the inspector had obtained measurements on the wrong weld, and

during the evening shift, another QC inspector and a Level 3 Examiner entered the drywell and obtained accurate measurements on the correct weld. All parties involved received 460 mrem during the entry. Subsequent to the second entry, the Level 3 Examiner questioned the results of the measurements and requested permission to reenter the drywell to obtain additional measurements. A fact finding meeting was held with the Level 3 Examiner, outage management, and the Program Engineering Support Manager to collect the "facts" regarding the first two entries and to determine if a third entry was required. Due to the urgency to proceed with the repair of the N2B nozzle weld, the Level 3 Examiner was granted permission to reenter the drywell. The third entry resulted in 270 mrem of additional dose. On November 9, 1999, the dayshift ISI/Weld Repair Team identified that the weld measurements taken by the QC inspector on the second entry were complete and accurate. The licensee estimated that approximately 600 mrem of unnecessary dose was expended during the first and third entries.

Neither AR had been closed at the time of the inspection exit meeting, however, preliminary investigations indicated that the craft briefing for the first entry may have lacked sufficient detail on the location of the cracked weld; the Level 3 Examiner had not been an active participant in the second briefing and this may have led to confusion about the weld's location; and the fact finding meeting held after the second entry had not fully established the "facts" about the first two entries before granting permission for the third entry. There was no evidence, however, that the RP program had contributed to the unnecessary dose. ALARA planning for the inspections had been good, the radiological briefings provided the QC inspectors and the Level 3 Examiner had been thorough, and the coverage provided by the HPTs during the entries had been adequate. In addition, ALARA planners had been tracking the inspectors' dose during the entries and had raised concerns about the craft planning for the inspections with outage management.

During reviews of the ARs the inspector noted that RP personnel had not attended the first two N2B nozzle inspection craft briefings. When asked about this, the RPM indicated that there was no written guidance for RP's input into the work planning process nor was there written guidance for planning emergent work during an outage. Although the maintenance planners had a formal computerized planning process complete with procedures and flowcharts, the RP staff's involvement in the planning process remained informal. Although RP planners had access to the maintenance planning software, the software provided no hold points for ALARA reviews. Since there was no formal guidance for planning emergent work, RP had not been required to attend the first two craft meetings. At the exit meeting, management indicated that the need for formalizing RP's input into the planning process would be investigated and that formal guidance for emergent work during outages would be considered.

c. Conclusions

The RP department was actively involved in the work planning process, and maintained an effective interface with the work control organization. Outage dose was maintained reasonably low given the overall scope of work and was attributed to aggressive dose management practices, sound ALARA initiatives and generally good oversight of

radiological work. The pre-job briefings provided to quality control inspectors prior to inspections of the N2B recirculation nozzle were not adequate and resulted in 600 millirem of unnecessary dose. The licensee identified a need for formal guidance on planning emergent work during outages.

R1.2 ALARA Program Implementation

a. Inspection Scope (83750)

The inspector evaluated the effectiveness of the licensee's radiological engineering controls and work practices and the results of efforts to reduce dose and implement the ALARA program for refueling outage 16. The inspector interviewed members of the RP staff; reviewed ALARA reviews, radiation work permits (RWPs) and applicable procedures; and observed ongoing work throughout the station.

b. Observations and Findings

Radiation work permits, ALARA evaluations and dose expenditure information for the following outage work activities were selectively reviewed:

- Torus Desludge
- Snubber Inspections and Testing
- MO-1909 Inspection and Repair
- N2B and N2D Recirculation Nozzle Repair
- Management Tours of the Drywell and Reactor Building

ALARA plans and associated evaluations were thorough and developed consistent with the potential job hazards. The inspector noted that ALARA review requirements were accurately reflected in the RWPs. For large or diverse scope activities and high risk work, the RWPs were divided into individual job steps, and specific ALARA controls were delineated for each step. For example, in the ALARA review for snubber inspection, replacement and testing, the use of lapel air sampling to monitor worker breathing zones during work on the snubbers was discussed. In the "Notes to the Worker" section of the RWP, lapel air sampling was required when performing grinding, cutting and welding on the snubbers. During the refueling outage 15, inconsistencies were identified between the requirements of the ALARA reviews and their associated RWPs. The licensee addressed this issue prior to outage 16, and the inspector found no inconsistencies between the ALARA reviews and RWPs examined.

The inspector observed good engineering controls to reduce general area dose rates including use of temporary shielding and high efficiency particulate air (HEPA) filter equipped portable ventilation systems to control airborne contaminants. The inspector also noted that few personnel contaminations were reported during the first 27 days of the outage indicating good contamination control efforts

The inspector attended pre-job briefings for several work activities and noted that the briefings were sufficiently thorough and provided the work crew with information necessary to safely complete the job. The inspector noted that drywell work briefings

were particularly thorough and informative. Two quiet rooms located adjacent to the main access point had been set aside for drywell briefings, and large survey maps of the drywell had been posted on the walls of both rooms. The HPT who conducted the briefing was particularly knowledgeable of the area work environment, and the maps provided a valuable visual aide during the presentation.

c. Conclusions

The ALARA program was generally implemented effectively, as ALARA plans were well developed and sufficiently thorough. ALARA initiatives and associated engineering controls were properly established, and efforts to reduce dose, prevent the intake of radioactive materials, and limit personnel contamination events were successful.

R1.3 Control and Oversight of Radiological Work

a. Inspection Scope (83750)

The inspector observed the RP staff's control and oversight of radiological work throughout the station and attended several outage meetings.

b. Observations and Findings

Even though some craft personnel had little nuclear plant experience, generally good radiation worker (radworker) practices and the lack of any significant radiological work related problems indicated good initial radworker training and effective RP staff work control. Health physics technicians (HPTs) were routinely observed controlling jobs and coaching workers, and RP control points were used effectively in a variety of station locations to better communicate with work crews and orchestrate the work force.

To enhance RP control and oversight of work activities in the reactor building, the physical layout of the main access point to the reactor building was changed prior to the outage. Individual desks were established as access control points for entries into the drywell, the refueling floor, and the balance of the plant. All individuals performing work in the reactor building were required to report to one of the desks before entering the building. HPTs manned each of the desks and were responsible for their assigned area. All workers entering the drywell, for example, reported to the drywell desk HPT to notify the technician of the entry and to be given a pre-entry briefing. In addition, 26 new cameras were installed in the reactor building, and communications equipment as well as monitors for cameras and remote dosimetry were installed in a room located immediately adjacent to the access point. This allowed lead HPTs to monitor and control work activities in their assigned areas without leaving the access point. The inspector observed little if any loitering around the access point indicating that these initiatives had been effective in reducing worker confusion and expediting reactor building entries.

Radiation protection control points were also established at the refueling floor and drywell. Each control point was manned by an HPT, and work activities in each area were monitored at the control point using cameras, remote dosimetry, and installed

communications equipment. To further control drywell entries, workers were required to have jump tickets before reporting to the drywell control point. Jump tickets were issued to workers by the drywell desk HPT immediately after their drywell entry briefing. Only those workers with jump tickets were allowed into the drywell. After collecting the jump tickets at the drywell control point, the duty HPT used them as a visual aide to track personnel in the drywell. Jump tickets appeared to have been an effective drywell access control tool. The inspector noted during tours of the drywell that personnel in the drywell had been kept to a minimum and few workers were loitering around the drywell control point.

c. Conclusions

Radiation protection staff oversight and control of radiological work, and management of RP resources for the outage was effective.

R1.4 Source Term Reduction Program

a. Inspection Scope (83750)

The inspector evaluated the dose and source term reduction programs. The inspector interviewed the RPM, reviewed source term data, and performed plant walk-downs.

b. Observations and Findings

The licensee's dose reduction and source term reduction programs remained essentially unchanged since refueling outage 15. The licensee installed additional temporary shielding for the outage and continued to implement the Noble Metals injection process. The licensee also tracked hotspots using a computerized ALARA Log Data base. The computerized log allowed the licensee to record the hotspot's history as well as to plan and schedule future actions. The licensee also purchased 25 additional cameras to be used primarily in the turbine building.

As the result of the source term reduction program, dose rates in the reactor and turbine buildings remained consistent with those observed during refueling outage 15. However, other dose reduction efforts, resulted in steadily declining outage and on-line dose. On-line dose declined from 120 rem in 1994 to 50 rem in 1998, and outage dose declined from about 400 rem in 1994 to about 155 rem for refueling outage 16. For outage 16, disregarding emergent work, routine work resulted in approximately 105 rem or 75 rem less than refueling outage 15.

c. Conclusions

Source term and dose reduction strategies continued to be implemented effectively.

R4 Staff Knowledge and Performance in Radiation Protection and Chemistry

R4.1 Evaluation of Radiation Worker (Radworker) Performance

a. Inspection Scope (83750)

The inspector evaluated radworker performance during the refueling outage through direct observation of work practices and reviews of selected action requests (AR).

b. Observations and Findings

The inspector observed work practices in the drywell and in a variety of other outage job sites throughout the station and found that radworker performance was adequate. Workers wore their dosimetry in the proper locations, generally removed protective clothing per station policy, and were knowledgeable of electronic dosimetry alarm setpoints and their radiological work conditions when questioned by the inspector.

The inspector reviewed selected ARs generated since the start of the outage to determine the scope and depth of radiation protection problems identified by the licensee. The review disclosed no significant radworker performance problems. Of those identified, most worker performance problems were minor knowledge based errors. Corrective actions taken by the RP staff to address the problems were timely and appeared appropriate. Given the relative inexperience of the craft work force, the lack of significant radworker performance problems reflected well on managements' efforts to train, control, and monitor their radiation workers.

During reviews of the ARs, the inspector identified one potential adverse trend in radworker performance. Approximately 25 percent of the 40 action requests reviewed were initiated to address minor incidents involving the mishandling of contaminated waste. The incidents ranged from finding contaminated waste in clean containers to the mislabeling of several bags of contaminated waste. The inspector noted that no AR had been written to address the incidents collectively nor had a fact finding been conducted to determine if the deficiencies taken as a whole constituted a programmatic weakness. The AR coordinator did indicate twice in his weekly human performance reports to management that problems with the control of waste had been identified in ARs. There were no indications in the reports, however, that the incidents taken collectively represented a weakness in the waste handling program. When the RPM and the AR coordinator were asked about this issue, they responded that the individual incidents had been very minor in nature and corrective actions had already been taken to address the individual problems. The licensee could not, however, provide the inspector with a document describing the corrective action that had been taken.

Administrative control procedure, ACP 114.5, "Action Request System", Rev. 2, August 12, 1999, described the process for handling human performance deficiencies (circumstances). The procedure provided three avenues to address and investigate human performance issues documented in ARs. Those avenues were root cause analyses, fact finding meetings, or the use of fact finding questionnaires. The licensee indicated that since the individuals responsible for the contaminated waste incidents

could not be identified, the fact finding questionnaires had not been used. In addition, since the incidents were minor in nature and safety insignificant, neither root cause analyses nor fact finding had been deemed necessary. However, at the exit meeting licensee management acknowledged that by not addressing the incidents individually or collectively using root cause analyses or fact finding, the intent of the procedure may have been circumvented. Management also indicated that since the trending of findings in ARs was an important part of the licensee's corrective action program, issues regarding the trending of minor human performance circumstances and the use of the AR procedure would be documented in an AR and investigated.

c. Conclusions

Radworker performance remained consistent, notwithstanding the relative inexperience of the craft work force. A potential generic issue involving the mishandling of contaminated trash had not been addressed in the corrective action program. Licensee management stated that concerns regarding the trending of minor deficiencies reported in ARs and the implementation of the AR procedure with regard to human performance deficiencies would be investigated.

R4.2 Plant Tours and Other Observations

a. Inspection Scope (83750)

The inspector and the resident inspector conducted several tours of the drywell and the reactor and turbine buildings during the inspection and reviewed radiological posting and labeling, housekeeping, and work control practices.

b. Observations and Findings

Radiological postings in all areas toured were consistent with station and regulatory requirements. Radiation and high radiation areas were posted to accurately reflect the area radiological conditions, and high and locked high radiation areas were controlled consistent with station procedures.

Appropriate contamination control practices were established at job sites in the drywell and reactor and turbine buildings, and ALARA controls for selected jobs witnessed by the inspector were as prescribed by the RWP. Radiological housekeeping was good in the turbine and reactor buildings; however, the inspector observed many examples of poor housekeeping practices in the drywell and the area immediately surrounding the drywell sump. The inspector noted debris such as old tags, tape, hard hats, etc. lying on the floor of the drywell, and rags and pieces of plastic draped across the drywell sump grill.

c. Conclusions

Radiological postings were well maintained and accurately reflected the area radiological conditions. High radiation areas and locked high radiation areas were controlled consistent with station procedures and regulatory requirements. Appropriate

contamination control practices were observed to be used at most job sites and radiological controls for work activities were as prescribed by the RWP.

R5 Staff Training and Qualifications in Radiation Protection and Chemistry

R5.1 Outage Staffing, Training, and Qualifications for the Radiation Protection Organization

a. Inspection Scope (83750)

The inspector reviewed the outage staffing plan for the RP program and the qualifications and training of contract RP staff. The inspector interviewed RP management and the individuals responsible for implementing the contract technician training program.

b. Observations and Findings

Prior to hiring contract RP technicians, the HP supervisor reviewed all of the candidates' resumes to verify training and experience. The licensee sought only individuals having commercial nuclear power experience.

Senior technicians were required to take a basic health physics exam and achieve a minimum score of 80 percent. Junior technicians were not required to pass the exam. They were, however, encouraged to take and pass the exam. The licensee provided the technicians with on-the-job-training, and each technician was required to demonstrate proficiency in specific RP job tasks. The technicians were also required to complete site specific procedure training and review significant operating experience reports.

Contract RP support for refueling outage 16 included 38 senior technicians, 6 junior technicians and 4 clerks. No contractor personnel were placed in RP management positions.

c. Conclusions

Outage staffing and training for the RP program was generally effective. The selection process for contract RP technicians was adequate, and the training of contract RP staff adequately prepared workers for assigned outage tasks.

R6 Radiation Protection and Chemistry Organization and Administration

R6.1 Outage Radiation Protection Organization

a. Inspection Scope (83750)

The inspector reviewed the RP outage organization and evaluated its effectiveness in controlling radiological work and implementing the outage RP program.

b. Observations and Findings

There have been few changes in the RP management team since the last outage. The RPM and HP supervisor had many years of experience at DAEC and had been in their current positions through a number of refueling outages. A former radioactive waste supervisor and QA auditor joined the RP staff prior to the outage as a Rad Pro Lead and will eventually assume the position of HP supervisor. A review of the memo titled "Rad Pro Organization for RF016" indicated that the RP staff responsibilities for the outage were clearly defined, and the staff was held accountable by RP management.

The RP outage organization was divided into two twelve-hour shifts, and each shift included an RP shift HP supervisor. The RPM maintained overall control of all RP outage activities. Work oversight was divided by plant locations which included drywell, refueling floor, reactor building, turbine building, and balance of plant, and a control point lead technician was responsible for command and control in each of the designated locations. Lead technicians assigned to specific projects were responsible for ALARA job planning and implementation of ALARA initiatives for that area. During plant walk-downs, the inspector noted that the lead technicians were usually in the field at the control points or observing work via the camera monitors located at the reactor building access point. The inspector found that the outage organizational scheme promoted ownership of radiological work and helped ensure that appropriate work oversight existed.

c. Conclusions

The outage organization's oversight contributed to the effectiveness of the RP program.

R7 Quality Assurance in RP Activities

R7.1 Quality Assurance (QA) Oversight of RP Activities for Refueling Outage 16

a. Inspection Scope (83750)

The inspector interviewed the QA lead auditor for the radiation protection program.

b. Observations and Findings

The lead auditor indicated that QA assessments of RP activities during the outage included performance based observations of radworker activities to verify proper radworker practices and conduct in the radiologically posted area. In addition, the auditors attended pre-job briefings, reviewed dose reports to determine if ALARA practices were being properly utilized, and observed work activities to verify that waste minimization techniques were identified and properly implemented. Each week the

auditors documented their findings and sent them via e-mail to the affected supervisors. At the end of the outage, all of the findings were to be incorporated into a final outage report.

The inspector reviewed the credentials of the three QA auditors performing RP assessments during the outage. All three auditors had received RP training, and several had served as radiation protection technicians at DAEC or other nuclear facilities.

c. Conclusions

Nuclear Oversight assessment activities for the outage appeared to be well planned and staffed by qualified individuals.

V. Management Meetings

XI Exit Meeting Summary

The inspector presented the inspection results to licensee management and staff at the conclusion of the site inspection on November 17, 1999. The licensee acknowledged the inspection findings and identified no proprietary information. The inspector obtained and reviewed additional outage dose performance information subsequent to the site inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Anderson, Plant Manager
R. Hite, Radiation Protection Manager
R. Perry, Health Physics Supervisor
K. Peveler, Manager, Regulatory Performance
D. Schebler, Radiation Protection Lead
G. Van Middlesworth, Site General Manager
M. Wood, Project Engineer Team Leader

INSPECTION PROCEDURES USED

IP 83750 Occupational Radiation Exposure

ITEMS OPENED AND CLOSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
AR	Action Request
HP	Health Physics
HPT	Health Physics Technician
HEPA	High Efficiency Particulate Air
ISI	In-Service-Inspection
PCE	Personnel Contamination Event
QA	Quality Assurance
QC	Quality Control
Radworker	Radiation Worker
RP	Radiation Protection
RPM	Radiation Protection Manager
RWP	Radiation Work Permit

PARTIAL LIST OF DOCUMENTS REVIEWED

Station Procedures

ACP 114.5 (Rev 21) Action Request System

RWPs and ALARA Reviews

ALARA Review # 99-012 RWP # 40050	Snubber Inspections and Testing - RFO16 Snubber Inspections and Testing - RFO16
ALARA Review # 99-011 RWP # 10192	MO-1909 Inspection and Repair MO-1909 Inspection and Repair
ALARA Review # 99-009 RWP # 50380	MH: Torus Desludge MH: Torus Desludge & Inspect/Repair Project
ALARA Review # 99-003 RWP # 30014	R1 Reactor Disassembly/Assembly R1 All Cavity Work With the Vessel Filled to the RPV Flange
RWP # 30016	R1 Work in the SFP, Cavity, or Dryer/Sep. Pits When Flooded
RWP # 30009 RWP # 40033	R1 All Support Work for RFO on the RX 855 Elevation NRC, Management Inquiries in the Drywell During RFO16

Investigation Reports and ARs

Engineering/Maintenance/Radiation Protection/Chemistry Assessment Team Second Quarter Report, Second Quarter 1998 Assessment Results, Radiation Protection & ALARA Programs Radiation Safety Condition Report Trends, 1999 Refueling Outage (10/15/99 to 11/15/99)

AR # 17485	Smears, yellow masslinn, and yellow bags were found in clean trash, October 28, 1999
AR # 17382	Lost "Radiological Dose Rate Tag" from trash bag, October 29, 1999
AR # 17592	Rad Materials have been placed in the Clean Zone in the Decon Room w/o appropriate survey documentation, November 5, 1999
AR # 15920	No "Dose Rate" tag attached to "Caution Radioactive Material" sticker on bag of metal shavings, October 23, 1999
AR # 17397	Clean Trash found to include contaminated items such as whirl paks, blue rags & rad tape, October 26, 1999
AR # 17398	Radioactively contaminated trash - wet mixed with dry, October 26, 1999
AR # 17399	Liquid strip coat was found inside a magenta hard hat from the Refuel Floor (cavity decon), October 26, 1999
AR # 17450	Clean Trash found to contain whirl paks & yellow masslinn, which are typically contaminated, October 27, 1999
AR # 17444	Trash, laundry and rad material are being returned to the Low Level Building without appropriate survey, October 28, 1999

AR # 13836

Weld measurements on Recirc Nozzle N2B have been taken incorrectly two times in the last 12 hours, November 8, 1999

AR #17695

Failure to follow the "Fact Finding" process, November 12, 1999

Other Documents

Daily Exposure Reports for: November 29, 28, 16, 15, 14, 7, 1999

Radiation Field Reduction at DAEC: A Summary

Duane Arnold Energy Center, Radiation Protection Program and Performance Enhancements, A Pamphlet

Temporary Health Physics Technician Performance Scenario Guide

A Radiation Protection Approach to the Implementation of Work Management, an Abstract