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From: Steven Orth
To: Wayne Slawinski
Date: Thu, May 19, 2005 7:36 AM
Subject: Re: Questions About Dresden Tritium Leak

Wayne,

Thanks for your quick response. I think that this is just what we needed.

Steve

>>> Wayne Slawinski 05/19/05 07:24AM >>>
Steve,

Repairs on the leaking line were completed in Nov 2004 (possibly October 2004). The leaking sections of pipe were replaced with new piping. The leak was identified by the licensee through sampling of its onsite wells in August 2004. The leak may have existed undetected since approx Jan 2004 (because they had discontinued routine onsite well sampling). About ten years ago (Chuck Phillips can fill you in) they also had a leak from underground CST lines that were in the same area as the 2004 leak. I believe those earlier leaks were just patched rather than replace the piping. It is possible that future leaks could occur given the age and condition of some of these old underground lines.

Our Input for Insp Report 04-13 (Section 2PS3) briefly summarizes my review of tritium sampling data associated with the leak. Also, attached are a few Q and As were provided to State Senator Durbin late last fall.

CC: Ann Marie Stone

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

Region III
LISLE, ILLINOIS 60532

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November 6, 2004

MEMORANDUM TO: Mark Ring, Chief
Reactor Projects Branch 1
Division of Reactor Projects

FROM: Kenneth Riemer, Chief /RA/
Plant Support Branch
Division of Reactor Safety

SUBJECT: DRESDEN NUCLEAR POWER STATION
DRS INPUT TO INTEGRATED REPORT 50-237/04-13;
50-249/04-13

Attached is a DRS report input for Dresden Nuclear Power Station Inspection Report 50-237/04-13; 50-249/04-13. This input provides the results of a five day onsite inspection ending November 10, 2004, which focused on the implementation of the licensee's ALARA program during the Unit 3 refueling outage. Additionally, we reviewed the sampling results and sampling locations associated with an underground line leak from the condensate storage tanks identified by the licensee in August 2004, to assess compliance with the Offsite Dose Calculation Manual and Technical Specifications. I have reviewed this input and have determined it is ready for distribution to the licensee and dissemination to the public.

The following inspection procedure sample information was input by our lead inspector into RPS on November 26, 2004, for this inspection effort:

- IP 71121.01, one sample completed
- IP 71121.02, 24 samples completed
- IP 71122.03, one sample completed

Attachment: Input to Inspection Report 50-237/04-13;
50-249/04-13

CONTACT: Wayne Slawinski, DRS
(630) 829-9820

DOCUMENT NAME: G:\DRS\Dresden Input to Report 04-13 WJS.wpd

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	R III	E	R III	N			
NAME	WSlawinski:sd		KRiemer				
DATE	12/01 /04		12/06 /04				

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Cover Letter

X No input, no significant findings.

Title Page

Inspector: Wayne Slawinski, Senior Radiation Specialist

SUMMARY OF FINDINGS

ADAMS boilerplate - Inspectable Area: Baseline Radiation Protection Inspection

Modify second paragraph as follows:

The baseline inspection was conducted by a regional senior radiation specialist inspector.

A. Inspector-Identified and Self-Revealed Findings

Cornerstones: Occupational and Public Radiation Safety

None

B. Licensee-Identified Violations

None

REPORT DETAILS

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors selectively reviewed the licensee's access controls and survey data for the following work areas located within radiation, high radiation and locked high radiation areas in the plant to determine if radiological controls, postings, and barricades were adequate:

- Unit 3 Drywell;
- Unit 3 Reactor Water Cleanup System Pump Aisle;
- Unit 3 Low and High Pressure Heater Bays; and

- **Unit 3 Steam Dryer/Separator Pit.**

The inspectors reviewed the radiation work permits (RWPs) that governed access to these areas and that provided radiological information to ensure the work control instructions and control barriers that had been specified were adequate. The inspectors also walked down and surveyed (using an NRC survey meter) selected areas in the Unit 2 and Unit 3 Reactor, Turbine, and Radwaste Buildings to verify that radiological conditions were consistent with area postings and controls.

These reviews represented one inspection sample.

- b. **Findings**

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls (71121.02)

- .1 **Inspection Planning**

- a. **Inspection Scope**

The inspectors reviewed plant collective outage exposure history, current outage exposure trends, and ongoing outage activities in order to assess current performance and exposure challenges. This included determining the plant's current three-year rolling average for collective exposure in order to provide a perspective of significance for any resulting inspection finding assessment.

The inspectors reviewed the Unit 3 refueling outage (D3R18) work and the associated work activity exposure and time/labor estimates for the following ten work activities which were likely to result in the highest personnel collective exposures or were otherwise radiologically significant activities:

- Reactor Water Cleanup System Maintenance Activities;
- Reactor Disassembly/Reassembly and Related Activities;
- Dryer Modification - Diver Support Crew Activities;
- Nuclear Instrumentation System Maintenance Activities;
- Drywell Main Steam Isolation Valve Maintenance;
- Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance;
- Drywell In-Service Inspections;
- "B" Recirculation Pump and Motor Maintenance Activities;
- Drywell Insulation Maintenance Activities; and
- Steam Dryer Modification Diving Activities.

The inspectors determined site specific trends in collective exposures based on plant historical exposure and source term data. The inspectors reviewed procedures associated with maintaining occupational exposures ALARA and assessed those processes used for D3R18 to project dose and track work activity exposures.

These reviews represented four inspection samples.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors obtained the licensee's list of Unit 3 outage work activities ranked by estimated exposure and reviewed the following radiologically significant work activities:

- Reactor Disassembly/Reassembly and Related Activities (RWP 10004164);
- Dryer Modification - Diver Support Crew Activities (RWP 10004168);
- Nuclear Instrumentation System Maintenance Activities (RWP 10004191);
- Drywell Main Steam Isolation Valve Maintenance (RWP 10004194);
- Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance (RWP 10004196);
- Drywell In-Service Inspections (RWP 10004206);
- "B" Recirculation Pump and Motor Maintenance Activities (RWP 10004208);
- Drywell Insulation Maintenance Activities (RWP 1000 4209); and
- Steam Dryer Modification Diving Activities (RWP 10004165).

For each of the activities listed above, the inspectors reviewed the ALARA Plan and associated total effective dose equivalent (TEDE) ALARA evaluation, time/labor estimates and dose projections, and exposure mitigation criteria in order to verify that the licensee had established radiological engineering controls that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA. This also involved determining that the licensee had reasonably grouped the radiological work into activities that were based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the exposure results achieved through the first half of the scheduled 30-day outage including the dose rate reductions and person-rem expended with the doses projected in the licensee's ALARA planning for the above listed work and for other selected outage activities. Reasons for inconsistencies between intended (projected) and actual work activity doses were evaluated to determine if the activities were planned reasonably well and to ensure the licensee identified any work planning deficiencies.

The interfaces between operations, radiation protection, maintenance and scheduling groups were reviewed to varying degrees to identify potential interface problems. The integration of ALARA requirements into work procedures and RWP documents was evaluated to verify that the licensee's radiological job planning would reduce dose.

The inspectors compared the person-hour estimates provided by maintenance planning and craft groups to the radiation protection ALARA staff with the actual work activity time expenditures in order to evaluate the accuracy of these time estimates.

The inspectors evaluated if work activity planning included consideration of the benefits of dose rate reduction activities such as shielding provided by water filled

components/piping, system flushing and hydrolazing and sequencing of scaffold and shielding installation/removal along with logic-ties in the work scheduling process in order to maximize dose reduction.

The licensee's work in progress reports were reviewed by the inspectors for those outage jobs that approached their respective dose estimates or that were otherwise evaluated by the ALARA staff to assess work progress. The reports were reviewed to verify that the licensee could identify problems and address them as work continued. Outage jobs of any dose significance that exceeded 125 percent of their dose projections or were anticipated to exceed dose projections were also reviewed to ensure work was suspended, if warranted, and identified problems were entered into the licensee's corrective action program consistent with the licensee's procedure.

These reviews represented seven inspection samples.

b. Findings

No findings of significance were identified.

3. Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's assumptions and basis for its collective outage exposure estimate and for individual job estimates, and evaluated the methodology and practices for projecting work activity specific exposures. This included evaluating both dose rate and time/labor estimates for adequacy compared to historical station specific or industry data.

The inspectors reviewed the licensee's process for adjusting outage exposure estimates when unexpected changes in scope, emergent work or other unanticipated problems were encountered which could significantly impact worker exposures. This included determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles and not adjusted to account for failures to effectively plan or control the work. The frequency and scope of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

The licensee's exposure tracking system was evaluated to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support control of outage work exposures. RWPs were reviewed to determine if they covered an excessive number of work activities to allow specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated if licensee management was aware of the exposure status of the work and would intervene if exposure trends significantly increased beyond exposure estimates.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors observed the following three jobs that were being performed in high or locked high radiation areas that potentially represented significant radiological risk to workers:

- Steam Dryer Modification Diving Activities;
- Drywell Permanent Shielding; and
- "B" Recirculation Pump Maintenance Activities.

The licensee's use of ALARA controls for these work activities was evaluated using the following:

The licensee's use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the licensee's ALARA reviews.

Job sites were observed to determine if workers were cognizant of work area radiological conditions and utilized low dose waiting areas and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays.

The inspectors reviewed the radiation exposures of individual divers that were involved in the steam dryer modification project to determine whether significant exposure variations existed that may be attributed to poor ALARA practices or to radiation protection staff work oversight or dose monitoring problems. The inspectors also reviewed selected whole body count results and internal dose assessments for several workers that had small intakes during the first half of the outage to evaluate the adequacy of these ongoing assessments.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 Source Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to understand historical trends and current status of plant source terms. The inspectors discussed the plant's source term with radiation protection and chemistry staffs to determine if the licensee has developed a good understanding of the input mechanisms and the methodologies and practices

necessary to achieve reductions in source term.

The inspectors reviewed selected exposure reduction initiatives taken for D3R18 such as flushing, use of shielding, and hydrolazing. The inspectors discussed the water chemistry control initiatives implemented by the licensee and its impact on source term reduction compared to industry practices.

The inspectors reviewed the licensee's 2004 - 2007 Source Term Reduction Plan and discussed its ongoing implementation with members of the radiation protection staff. The inspectors determined if specific sources had been identified by the licensee for exposure reduction initiatives and that priorities were established or being considered for the implementation these actions.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.6 Radiation Worker Performance

a. Inspection Scope

Radiation worker and radiation protection technician performance was observed during work activities being performed in radiation areas and locked high radiation areas including various work activities ongoing in the Unit 3 reactor building and turbine building. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope, the tools to be used for the job, by utilizing low dose waiting areas and had knowledge of the radiological conditions and adhered to the ALARA requirements for the work activity. Job oversight, job support and the communications provided by the radiation protection staff were also evaluated by the inspectors.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.7 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed an outage readiness self-assessment and the results of ongoing Nuclear Oversight Department outage field observations related to the radiation protection program to assess the licensee's ability to identify and correct problems.

The inspectors verified that identified problems were entered into the corrective action program for resolution, and that they had been properly characterized, prioritized, and were being addressed. This included outage ALARA critiques/lessons learned for

exposure performance from the licensee's previous Unit 3 refueling outage in 2002.

Corrective action reports (condition reports (CRs)) generated during the first half of the Unit 3 outage related to the ALARA program were selectively reviewed and staff members were interviewed to verify that follow-up activities were being conducted in a timely manner commensurate with their importance to safety and risk using the following criteria:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes; and
- Identification and implementation of effective corrective actions.

The licensee's corrective action program was also reviewed to determine if repetitive deficiencies in problem identification and resolution had been addressed.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS3 Radiological Environmental Monitoring Program (71122.03)

.1 Followup on Condensate Storage Tank Underground Line Leak

a. Inspection Scope

The inspectors reviewed the licensee's water sampling results and sampling locations following the identification of an underground pipe leak from the condensate storage tanks in late August 2004. Tritium and other radionuclide sampling results were reviewed for various periods in 2004, focusing on tritium analyses for September and October 2004. Sampling results reviewed included samples collected from protected area (inside fence-line) shallow and deep wells, protected area storm drains, the licensee's onsite waste water treatment facility effluent, those areas excavated to repair the leaking line, the Unit 1 intake canal, and selected licensee monitoring wells located outside the protected area south of the plant. The sampling data was reviewed to determine if samples were collected from representative locations so as to demonstrate Offsite Dose Calculation Manual (ODCM), Technical Specification and 10 CFR Part 20 concentration limits were met. Additionally, the assumptions and the results of licensee calculations of offsite dose associated with the leak were reviewed to verify compliance with ODCM limits and 10 CFR 50, Appendix I objectives.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA6 Meetings

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Occupational Radiation Safety ALARA program inspection during the licensee's Unit 3 refueling outage with Mr. D. Wozniak on November 10, 2004.

KEY POINTS OF CONTACT

Licensee

D. Wozniak, Plant Manager

S. Taylor, Radiation Protection Manager

H. Bush, Radiological Engineering Manager

LIST OF DOCUMENTS REVIEWED

2OS1 Access Control to Radiologically Significant Areas

RWP 10004203; D3R18 Drywell Inspections; Revision 0

RWP 10004181; D3R18 Observations/Tours and Inspections; Revision 0

RWP 10004165; D3R18 Reactor Steam Dryer Modification Diving Activities; Revision 2

2OS2 ALARA Planning and Controls

RP-AA-401; Operational ALARA Planning and Controls; Revision 4

RP-AA-400; ALARA Program; Revision 3

Historical Outage Dose Information for Units 2 and 3

D3R18 RWP Preparation Matrix, Dose Estimates and Associated Time/Labor Estimates and Project View Work Planning information

D3R18 Daily Dose Reports and Graphs for November 4 - 10, 2004

RWP 10004147 (Revision 1); Associated TEDE ALARA Evaluations and Recognized Risk Personnel Contamination Dose Assessment; D3R18 RWCU System Maintenance

RWP 10004164 (Revision 1); Associated ALARA Plan, TEDE ALARA Evaluations and

Recognized Risk Personnel Contamination Dose Assessment; D3R18 Reactor Disassembly/Reassembly and Related Activities

RWP 10004168 (Revision 0); Associated ALARA Plan, TEDE ALARA Evaluations and Recognized Risk Personnel Contamination Dose Assessment; D3R18 Dryer Modification - Support Crew Activities

RWP 10004191 (Revision 1); Associated ALARA Plan, TEDE ALARA Evaluations and Recognized Risk Personnel Contamination Dose Assessment; D3R18 Nuclear Instrumentation System Maintenance Activities

RWP 10004194 (Revision 1); Associated ALARA Plan and TEDE ALARA Evaluations; D3R18 Drywell Main Steam Isolation Valve Maintenance

RWP 10004196 (Revision 1); Associated ALARA Plan and TEDE ALARA Evaluations; D3R18 Drywell Main Steam Safety, Electromatic and Target Rock Valve Maintenance

RWP 10004206 (Revision 1); Associated ALARA Plan, TEDE ALARA Evaluations and Recognized Risk Personnel Contamination Dose Assessment; D3R18 Drywell In-Service Inspection Activities

RWP 10004208 (Revision 2); Associated ALARA Plan, TEDE ALARA Evaluations and Recognized Risk Personnel Contamination Dose Assessment; Drywell "B" Recirc Pump and Motor Maintenance Activities

RWP 10004209 (Revision 1); Associated ALARA Plan and TEDE ALARA Evaluations; D3R18 Drywell Insulation Maintenance Activities

RWP 10004165 (Revision 2); Associated ALARA Plan; D3R18 Reactor Steam Dryer Modification Diving Activities

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004165, dated November 8, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004186, dated November 6, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004201, dated November 2, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004209, dated November 8, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004188, dated November 1, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004165, dated November 2, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004164, dated

November 4, 2004

RP-AA-401, Attachment 7; Work-In-Progress Review for RWP 10004659, dated November 5, 2004

Dresden Station Units 2/3 Boiling Water Reactor Assessment and Control Historical Survey Data

Dresden Station 2004 - 2007 Source Term Reduction Plan, Listing of D3R18 Temporary Shielding Packages and Hydrolazing Schedule

Focus Area Self-Assessment Report; Outage Readiness and Preparation, dated October 13, 2004

Nuclear Oversight "Rad Practices" Field Observation Summary Matrix for November 1-5, 2004

D3R17 Post Outage Radiation Protection Department Report 2002

CR 00270562; Bubble Suits Failed to Maintain Integrity; dated November 5, 2004

CR 00265362; Venture Exceeds Dose Goal Estimate on Scaffold; dated October 20, 2004

CR 00269685; SAIC Dosimeter Inadvertently Zeroed for Steam Dryer Diver; dated November 2, 2004

2PS3 Radiological Environmental Monitoring Program

Water Sampling Results from Various Monitoring Wells, the Waste Water Treatment Facility, Unit 1 Intake Canal, Storm Sewers and Excavated Areas for Various Periods between June and October 2004

Estimates of Offsite Doses from Difficult to Measure Nuclides and ODCM Calculation Worksheets; dated October 19, 2004

LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
CR	Condition Report
D3R18	Dresden Station's 18 th Unit 3 Refueling Outage
ODCM	Offsite Dose Calculation Manual
RWP	Radiation Work Permit
TEDE	Total Effective Dose Equivalent