



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

September 30, 2005

Honeywell Specialty Chemicals  
Mr. David Edwards  
Plant Manager  
P.O. Box 430  
Metropolis, IL 62690

SUBJECT: NRC INSPECTION REPORT NO. 40-3392/2005-005 AND NOTICE OF VIOLATION

Dear Mr. Edwards:

This report refers to the inspection conducted from August 29, 2005 through September 1, 2005 at the Honeywell Specialty Chemicals Facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the report.

The inspection consisted of an examination of activities conducted under the license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of the license. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG 1600, which is included on the NRC's web site at <http://www.nrc.gov/what-we-do/regulatory/enforcement.html>. The violation is cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding the violation are described in the subject inspection report. The violation involves the failure to implement procedural requirements for restricting access to a visibly contaminated area.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this letter, please contact us.

Sincerely,

*/RA/*

Jay L. Henson, Chief  
Fuel Facility Inspection Branch 2  
Division of Fuel Facility Inspection

Docket No. 40-3392  
License No. SUB-526

- Enclosures:
1. Notice of Violation
  2. NRC Inspection Report  
No. 40-3392/2005-005

cc w/encls:  
 Gary Wright  
 Emergency Management Agency  
 Division of Nuclear Safety  
 1035 Outer Park Dr., 5<sup>th</sup> Floor  
 Springfield, IL 62704

Distribution w/encls:  
 J. Henson, RII  
 D. Hartland, RII  
 B. Nelson, NMSS  
 M. Raddatz, NMSS

X SISP REVIEW COMPLETE: Initials: JLH\_\_\_\_  SISP REVIEW PENDING\*: Initials: \_\_\_\_\_ \*Non-Public until the review is complete  
 X PUBLICLY AVAILABLE  NON-PUBLICLY AVAILABLE  SENSITIVE X NON-SENSITIVE  
 ADAMS: X Yes ACCESSION NUMBER: \_\_\_\_\_

OFFICE		RII:DFFI	RII:DFFI	RII:DFFI			
SIGNATURE		JLH 9/30/05	JLH 9/30/05	JLH 9/30/05			
NAME		AGooden	CTaylor	DHartland			
DATE	9/ /2005	9/ /2005	9/ /2005	9/ /2005	9/ /2005	9/ /2005	9/ /2005
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

## NOTICE OF VIOLATION

Honeywell Specialty Chemicals  
Metropolis, Illinois

Docket No. 40-3392  
License No. SUB-526

During an NRC inspection conducted on August 29 through September 1, 2005, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below.

License Condition 10 of NRC License No. SUB-526, Amendment No.16, authorizes, in part, the use of licensed materials in accordance with the statements, representations, and conditions in Chapters 1 through 7 of the license application dated January 30, 2003.

Chapter 2, Section 2.6 of the license application, dated January 30, 2003, requires in part, that plant operations shall be conducted in accordance with written Standard Operating Procedure Manuals.

Section 4.5.2 of the Health Physics Procedure Manual, "Procedure for Contamination Control," requires, in part, that when decontaminating spills in uncontained areas, mark off the area with radiation or safety ribbon to prevent fork trucks or personnel from spreading the contamination.

Contrary to the above, on August 31, 2005, the North Pad area had not been marked off with radiation or safety ribbon to prevent fork trucks or personnel from spreading visible triuranium octoxide ( $U_3O_8$ ) and uranium tetrafluoride ( $UF_4$ ) contamination.

This is a Severity Level IV violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Honeywell Speciality Chemicals is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made publically available, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made publically available without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld, and provide in detail the basis for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguard's information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 30<sup>th</sup> day of September, 2005

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2005-005

Licensee: Honeywell International, Inc.

Facility: Metropolis Works

Location: P. O. Box 430  
Metropolis, IL 62960

Dates: August 29 - September 1, 2005

Inspectors: A. Gooden, Senior Fuel Facility Inspector  
C. Taylor, Fuel Facility Inspector

Accompanying Personnel: D. Ayres, Chief, Fuel Facility Branch 1  
N. Ashkeboussi, Nuclear Safety Intern

Approved by: Jay L. Henson, Chief  
Fuel Facility Inspection Branch 2  
Division of Fuel Facility Inspection

## EXECUTIVE SUMMARY

Honeywell International, Inc.  
NRC Inspection Report No. 40-3392/2005-005

This routine, announced inspection was conducted in the areas of emergency preparedness, radiation protection, and transportation. The inspection involved observation of work activities, a review of selected records, and interviews with plant personnel. The inspection identified the following aspects of the licensee programs as outlined below:

### **Emergency Preparedness**

- A transition plan was in place to address recent management changes involving the emergency preparedness program. An inspector follow up item (IFI) was identified to verify the performance of a calendar year (CY) 2005 comprehensive audit and the corrective actions to ensure that future audits are performed in accordance with Section 7.4 of the Emergency Response and Radiological Contingency Plan (ERP/RCP) (Paragraph 2.a).
- The Emergency Plan Implementing Procedures adequately implemented the ERP/RCP (Paragraph 2.b).
- Emergency response training was adequate for emergency response organization (ERO) personnel, but additional training was identified for control room operators involved with notification and activation of the ERO during off hours. An IFI was identified to ensure that the emergency notification roster is maintained current, that control room operators are trained regarding the speed dial capability of the backup notification system, and to perform an off shift drill to demonstrate timely notification and activation of the ERO (Paragraph 2.c).
- Based on interviews and records reviewed, the inspectors determined that the offsite interface was properly maintained (Paragraph 2.d).
- The licensee conducted exercises in accordance with the requirements of the ERP/RCP. The performance of quarterly drills using realistic scenarios provided sufficient challenges to maintain the proficiency of the response organization (Paragraph 2.e).
- Based on the equipment operability checks and documentation for maintenance and calibration, the inspectors determined that the reliability of selected equipment was good and the equipment was maintained in a state of operational readiness (Paragraph 2.f).

### **Transportation**

- The designation of transportation authorities and responsibilities was adequate but at times fractionated. Management approved procedures were established and acceptable to carry out the various transportation activities at the facility (Paragraph 3.a).
- The licensee's preparation of transportation packages met the requirements of the regulations. The hazardous material training program was acceptable and in accordance with requirements specified in 49 Code of Federal Regulations (CFR) Part 172 (Paragraph 3.b).

- The licensee's Certificates of Competent Authority were current and the licensee adequately met the requirements as outlined in the certificates (Paragraph 3.c).

### **Radiation Protection**

- The external and internal exposure monitoring program was implemented in a manner to maintain doses as low as reasonably achievable (ALARA). Exposures were less than the occupational limits in 10 CFR 20.1201. However, an unresolved issued was open because of an ongoing internal investigation that identified problems with the licensee's bioassay tracking system (Paragraph 4.a).
- The issuance of respiratory protection equipment met regulatory requirements. No negative observations or findings were noted (Paragraph 4.b).
- Radiological safety postings and radiation work permits were properly utilized to communicate potential hazards and protective equipment requirements to workers (Paragraph 4.c).
- A violation for failure to implement procedural requirements for restricting access to a visibly contaminated area was identified (Paragraph 4.d).
- The ALARA program was properly implemented (Paragraph 4.e).

### **Attachments:**

1. Honeywell Matrix Table
2. Partial List of Persons Contacted  
Inspection Procedures Used  
Items Opened, Closed, and Discussed  
List of Acronyms Used

## REPORT DETAILS

### 1. Summary of Plant Status

During the inspection period, no significant operations issues or unusual conditions occurred.

### 2. Emergency Preparedness (88050) (F3)

#### a. Review of Program Changes (F3.01)

#### (1) Inspection Scope and Observations

Changes to the Emergency Response and Radiological Contingency Plan (ERP/RCP), organization, facilities, and equipment were reviewed to assess the impact on the effectiveness of the program. The adequacy of the emergency preparedness audit required by Section 7.4 of the ERP/RCP was also evaluated.

Since the last routine emergency preparedness inspection, several significant organization changes were made including the Plant Manager. In the event of an emergency, the Plant Manager assumes the role of Crisis Manager with the responsibility for overall emergency coordination. The new Plant Manager was observed as the Crisis Manager during an NRC evaluated exercise in May 2005 (Inspection Report No. 40-3392/2005-02). No significant problems were identified. Additional changes to the normal organization which resulted in changes to the emergency preparedness program involved the emergency preparedness reporting chain, the day to day management responsibilities for emergency preparedness, and the assignment of key management personnel to the emergency response organization. The inspectors were unable to determine the impact of the additional changes in that management decisions regarding the changes were made just prior to the start of the inspection. The inspectors discussed with the licensee contact the transition plan for changes involving the management responsibilities for emergency preparedness. No changes were made to significant equipment and/or facilities.

ERP/RCP changes since the last inspection were submitted to NRC for review and approval as part of a license renewal request. The referenced changes incorporated lessons learned from the December 2003 uranium hexafluoride (UF<sub>6</sub>) release. The review was incomplete at the time of the inspection.

Section 7.4 of the ERP/RCP required that the "emergency response program be audited on an annual basis to ensure the program is being adequately maintained." The licensee provided the inspectors with calendar year (CY) 2004 audit documentation for review. The inspectors noted that the audit included several aspects of the emergency response program but the scope of the audit was not as comprehensive as discussed in Section 7.4 of the ERP/RCP. The last comprehensive audit done in accordance with the ERP/RCP was dated March 31, 2003. The inspectors informed the licensee that although a number of program reviews and program improvements were made since the last routine inspection, the CY 2004 audit was not a comprehensive audit of the emergency response program and was an area requiring corrective actions. The licensee acknowledged this finding and indicated that a comprehensive audit would be conducted in accordance with Section 7.4 of the ERP/RCP during CY 2005. The licensee was informed that the performance of a CY 2005 comprehensive audit and the

corrective actions to ensure that future audits are performed in accordance with Section 7.4 of the ERP/RCP was considered an inspector followup item (IFI 40-3392/2005-05-01).

(2) Conclusions

Significant organization changes to both the normal and emergency organization were identified and a transition plan was in place. An IFI was identified to verify the performance of a CY 2005 comprehensive audit and the adequacy of corrective actions to ensure that annually audits are performed in accordance with Section 7.4 of the ERP/RCP.

b. Implementing Procedures (F3.02)

(1) Inspection Scope and Observations

Changes to the Emergency Plan Implementing Procedures (EPIPs) were reviewed for adequacy and to ensure that the revised procedures continue to implement the ERP/RCP. The selected procedure changes were considered procedure updates or enhancements and continue to implement the ERP/RCP requirements. The changes were reviewed and approved in accordance with Section 7.1 of the ERP/RCP and Section 5.1 of EPIP-008.

(2) Conclusions

The EPIPs adequately implemented the ERP/RCP.

c. Training and Staffing of Emergency Organization (F3.03)

(1) Inspection Scope and Observations

Emergency response training was reviewed to determine if the licensee had provided adequate training to all personnel designated as primaries and/or alternates to the emergency response organization (ERO). In addition, emergency response training was reviewed for a small random sampling of personnel assigned to the emergency response team (ERT) referred to as the "red hats."

The inspectors verified via interview and documentation that ERT training and ERO training for personnel designated as primaries or alternates was current and in accordance with procedural requirements. The inspectors conducted interviews with control room personnel to determine their familiarity with using the backup system for activation of the emergency organization during off-shifts and weekends. Sections 3.2 and 5.1 of the ERP/RCP stated that an automated telephone call-in system was in place for activating the emergency organization and a manual telephone call system was in place and used as a backup system. The inspectors questioned the licensee contact regarding what if any drills had been done to demonstrate timely notification of personnel and activation of the Crisis Management Center during off-shifts using the automated or backup notification system. The inspectors were informed that no such drills had been performed. In response, the inspectors questioned the adequacy of the manual telephone system to provide timely notification to responders during off-shifts, and the licensee contact informed the inspectors that the backup system included

telephones with speed dial capability. When operators were questioned by the inspectors during walkthroughs to demonstrate the backup system for notification during off-shifts, two negative observations were made: (1) the interviewee indicated that individual responders would be contacted by dialing the home phone number rather than the speed dial number listed on the notification roster; and (2) the notification roster that was used by the operator was a previous version (dated April 2005) and contained the names and phone numbers of former employees that were no longer members of the site or emergency organization. The inspectors noted that the current roster which was dated May 23, 2005, also included a former employee. In response to the inspectors' observations, the licensee took actions to update the notification roster and committed to provide training to control room personnel regarding the use of the speed dial capability. The licensee also committed to perform an off hours drill to demonstrate timely notification and activation of the ERO during off-shift hours. The licensee was informed that the corrective actions to update the ERO notification roster, provide training to control room personnel regarding the backup notification system operability, and perform an off-shift drill was considered an IFI (IFI 40-3392/2005-05-02).

The inspectors review of training documentation verified that all primaries and alternates filling key positions within the ERO were trained in accordance with the EPIP. Training included the discussion of roles and responsibilities and a table-top drill for participants to reinforce the training. The randomly selected ERT members (Red Hats) were also trained in accordance with the EPIP.

(2) Conclusions

Based on interviews and training documentation, emergency response training was adequate for members of the ERO and ERT. However, additional training was identified for control room personnel involved with the notification and activation of the ERO during off hours. An IFI was identified to ensure that the emergency notification roster is maintained current, that control room operators are trained regarding the speed dial capability of the backup notification system, and to perform an off shift drill to demonstrate timely notification and activation of the ERO.

d. Offsite Support (F3.04)

(1) Inspection Scope and Observations

Licensee activities in the areas of training, agreements, and exercises were reviewed to determine if the licensee was periodically involving offsite support groups.

All agreements with offsite support groups were reviewed and verified as current and maintained in accordance with Section 7.6 of the ERP/RCP. Offsite support training was provided during April 2005 to emergency medical technicians, hospital staff, and medical transport services personnel regarding the handling of victims exposed to hydrofluoric acid (HF). The inspectors discussed with offsite contacts for the Massac County Fire Department and the Emergency Services Disaster Agency the interface between the site and offsite authorities. No problems were identified. Offsite authorities were complimentary of the licensee's interface and the frequency of meetings and other communications. The last site familiarization tour was provided to offsite fire support and rescue personnel during June 2003. Offsite authorities participated in the last biennial exercise conducted on May 24, 2005.

(2) Conclusions

Based on interviews and records reviewed, the inspectors determined that the offsite interface was properly maintained.

e. Drills and Exercises (F3.05)

(1) Inspection Scope and Observations

Section 7.3 of the ERP\RCP required that biennially an emergency exercise be conducted. This area was reviewed for adequacy in testing both onsite and offsite emergency response capability. The effectiveness of the licensee's critique to self identify areas of improvement was also reviewed.

The last biennial exercise was observed by NRC on May 24, 2005, and included participation by federal, State, and local support agencies. In addition to the biennial exercise, the licensee conducted periodic drills and table-top exercises. The accident scenarios that were postulated provided sufficient challenges to maintain the proficiency of response personnel.

Critique items resulting from the drills and/or exercises were reviewed and if needed tracked for corrective actions via the corrective action system (E-CATS).

(2) Conclusions

The licensee conducted exercises and drills in accordance with the requirements of the ERP/RCP. The performance of drills using realistic scenarios provided sufficient challenges to maintain the proficiency of the response organization.

f. Emergency Equipment and Facilities (F3.06)

(1) Inspection Scope and Observations

Emergency response equipment, instrumentation, and supplies used to evaluate and assess radiological conditions were examined to determine if these items were maintained in a state of operational readiness.

The inspectors performed an inventory and operability check of equipment (respiratory protection, air samplers, etc.) and supplies, and checked for shelf-life, reliability and quantity. No significant problems were identified. The inspectors examined the state of readiness of survey instruments and supplies inside hospital emergency kits. The radiological survey instruments were operational as determined by the proper response to both a battery and radioactive source check. Documentation in support of the calibration and maintenance of the onsite meteorological system, the HF fence monitors, and monthly testing of the UF<sub>6</sub> evacuation alarm and the public warning system sirens were reviewed. The inspectors also reviewed documentation and interviewed security personnel assigned the responsibility for monthly testing of the offsite public warning system sirens and offsite communications equipment. No problems were noted.

(2) Conclusions

Based on the equipment operability checks and documentation for maintenance and calibration, the inspectors determined that the reliability of selected equipment was good and the equipment was maintained in a state of operational readiness.

**3. Transportation (86740) R4**

a. Management Controls (4.05)

(1) Scope and Observations

The inspectors discussed with the staff involved in the transportation of radioactive materials changes that occurred in the organization since the last inspection. The inspectors noted that because several individuals had been given authority and responsibilities in particular areas of the transportation program, the program at times appeared fractionated. The inspectors discussed with the licensee the need to have centralized oversight for all transportation activities. The licensee acknowledged the problem and intended to make improvements to the program. This concern was also identified in October 2004 by an outside consultant looking at transportation activities at the plant.

The inspectors interviewed individuals who had transportation responsibilities in the following areas: UF<sub>6</sub> cylinder transport, waste shipments, ore sampling shipments, scrap metal and training.

The inspectors also verified that written approved procedures were established to carry out the various transportation activities at the facility, including package preparation, delivery of completed packages to carriers, and receipt of packages. The inspectors verified that the changes to procedures were approved by licensee management.

(2) Conclusions

The designation of transportation authorities and responsibilities was adequate but at times appeared fractionated. Management approved procedures had been established and were adequate to carry out the various transportation activities at the facility.

b. Preparation and Delivery of Completed Packages for Shipment (R4.01 and R4.02)

(1) Scope and Observations

The inspectors reviewed selected portions of the following procedures pertaining to the shipment of radioactive materials:

- "UF<sub>6</sub> Cylinder Quality Assurance Program," dated January 1, 2003
- Audit Report "Transportation Activities," dated October 26 through 28, 2004
- "Shipping Hazardous Material," Part 1, Health Physics Procedure Manual, dated March 1999
- "Monitoring Transport Vehicles," Part 1, Health Physics Procedure Manual, dated March 1999

- “Monitoring UF<sub>6</sub> Cylinders,” Part 2, Health Physics Procedure Manual, dated March 1999

The inspectors observed actual transport operations and package preparation activities using the appropriate sections of the standard operating procedures noted above. Specifically, the inspectors observed loading operations involving UF<sub>6</sub> cylinders, and packaging of ore samples for offsite analysis. The licensee transports by contract carrier on average approximately 9-12 cylinders per day. Ore samples from various clients were shipped on average 2-3 times a week as limited excepted quantity. The inspectors observed several physical inspections of cylinders by yard operators. The inspectors observed proper use of a procedural checklist by yard operators prior to loading cylinders on the trucks. The procedural checklist required physical inspections of cylinders valve caps, stem and packing units. The licensee used the appropriate labels and markings and no issues were identified.

The inspectors verified that the hazard category, surface contamination, United Nations identification number, label name, criticality safety index, and transport index numbers on the shipping paper documentation for UF<sub>6</sub> cylinders were consistent with the transportation regulations. The inspectors reviewed the shipping paper documentation for selected shipments made from January 2004 through July 2005. The licensee prepared the required shipping paper information accurately. The inspectors also verified that the licensee maintained shipping documentation for at least three years. No significant issues were identified.

The inspectors reviewed the hazardous material training (HAZMAT) provided to employees involved with the handling of licensed and hazardous materials. The licensee’s HAZMAT training program was consistent with the requirements of 49 Code of Federal Regulations (CFR) Part 172. The inspectors reviewed training records of the staff performing the transportation activities and noted the training was current. In addition, the inspectors reviewed the hazardous material course material and determined that the training materials were acceptable and satisfied the requirements.

(2) Conclusions

The licensee’s preparation of transportation packages and HAZMAT program met the requirements of 49 CFR Part 172.

c. Certificates of Competent Authority (CCA) (R4.04)

(1) Scope and Observations

The inspectors reviewed documentation from the Department of Transportation (DOT) listing Honeywell as a registered user of the following International Atomic Energy Association (IAEA) Certificates of Competent Authority (CCA): USA/0679/H(U)-96, USA/0680 H(U)-96 and USA/0681/H(U)-96. The inspectors verified that Honeywell’s CCAs’ had been revalidated by the DOT in accordance with 10 CFR 71.21. The inspectors verified the latest revision of the certificates were current and the licensee was following the requirements as outlined in the certificates. The inspectors noted that the UF<sub>6</sub> shipments were in accordance with the CCA.

(2) Conclusions

The licensee's CCAs were current and the licensee adequately met the requirements as outlined in the certificates.

**4. Radiation Protection (83822) (R1)**a. External and Internal Exposure Control (R1.04 and R.1.05)(1) Scope and Observations

The inspectors interviewed licensee representatives, reviewed radiation protection procedures, and reviewed personnel exposure data, to determine if exposures were in compliance with 10 CFR Part 20.1201 limits.

Based on interviews, procedural reviews, and observations of plant personnel inside radiation control areas, the licensee's monitoring program for external and internal exposure was consistent with the requirements in 10 CFR Part 20. The program was adequately based on the type of operations and work activity taking place at the site. The inspectors reviewed dosimetry results from January 2004 to June 2005 and determined that the maximum assigned external exposure was well below the limits for occupational exposure in 10 CFR 20.120. The licensee's dosimetry provider was certified by the National Voluntary Laboratory Accreditation Program. Table 1 below displays the maximum assigned exposure data for CYs 2003 and 2004. The inspectors reviewed quarterly dose ranges for employees for the first and second quarter of 2005 and all results were well within administrative limits.

**Table 1.**  
**Maximum Annual Dose Data**

Year	Deep Dose Equivalent (DDE)-rem	Shallow Dose Extremity (SDE)-rem	Total Effective Dose Equivalent (TEDE)-rem	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE)-rem
2003	0.895	2.102	1.723	119.8	1.496
2004	0.770	2.266	1.253	143.8	0.831

The inspectors reviewed the methodology by which workers were selected to participate in the bioassay program. During the review, the inspectors determined that the licensee was in the process of conducting an internal investigation regarding problems identified in their bioassay tracking system. The licensee explained that during an internal audit of the bioassay program, individuals had been identified as not submitting their bioassay specimens in a timely fashion. From discussions with licensee's management, initial investigations of the bioassay program showed procedural noncompliance, management oversight issues and various communication and coordination problems between the radiation staff who was responsible for collection of bioassays and various

departments. Because the investigation was ongoing and management was aware of the problem, the inspectors' review to determine how the bioassay tracking system failed and the extent of problem for possible health and safety implications, will be tracked as an Unresolved Item (URI) 40-3392/2005-05-03.

(2) Conclusions

The external and internal exposure monitoring program was adequately implemented to facilitate as low as reasonable achievable (ALARA) goals. Exposures were less than the occupational limits in 10 CFR 20.1201. However, a URI was open because of an ongoing internal investigation that identified problems with the licensee's bioassay tracking system.

b. Respiratory Protection (R1.06)

(1) Inspection Scope and Observations

Respiratory protection equipment issuance, storage, maintenance, and training were examined for adequacy in assuring that equipment was properly maintained and issued to certified users only.

The inspectors observed activities at the respirator facility involving fit testing and issuance of equipment. The inspectors observed three workers who successfully completed a respirator fit test. Fit tests were conducted every 12 months during which the worker was fitted for half face and full face respirators. Names were also selected from specific plant activities requiring respiratory protection to verify that the workers' certifications were current and that the appropriate devices were issued. No examples were noted of unauthorized use of equipment by untrained personnel or by workers with expired training.

(2) Conclusions

The issuance of respiratory protection equipment met regulatory requirements. No negative observations or findings were noted.

c. Postings, Labeling and Control (R1.07)

(1) Inspection Scope and Observations

The inspectors reviewed the licensee's program for postings as required by 10 CFR 19.11 to determine if documents were posted in sufficient places to permit individuals engaged in licensed activities to observe them. Several work locations were examined to determine if radioactive containers were properly labeled and to assess the adequacy of contamination control barriers and posting of radiation areas as required by 10 CFR 20.1902. Radiation work permits (RWPs) and work procedures were reviewed to determine the adequacy of the requirements posted for worker protection and the degree to which those requirements were implemented.

Bulletin boards located in designated areas were posted such that workers could observe documents or obtain details as to where documents could be examined. All observed work areas involving radioactive material or potentially contaminated material were properly posted and RWPs were readily available.

The inspectors determined from discussions with the licensee, that the licensee continued to use the monitoring system in the health physics lab to monitor which floors were on airborne. The inspectors observed the monitoring equipment and verified that the correct floors were being identified by performing walk-downs of the Feed Materials Building (FMB), reviewing log books and interviewing operators in the control room. There were no problems noted.

(2) Conclusions

Radiological safety postings and RWPs were properly utilized to communicate potential hazards and protective equipment requirements to workers.

d. Surveys (R1.08)

(1) Inspection Scope Observations

The twenty-four hour grab air samples and the contamination control survey programs were reviewed to determine if surveys were effective in the identification of airborne particulates and surface contamination and were performed in accordance with procedures.

The results disclosed that the routine and non-routine surveys were adequate in the identification of potential airborne and contaminated areas. During plant tours, the inspectors observed the daily air sample locations on all floors and also observed plant operators conducting work requiring respirators. In addition, the inspectors walked the floors of the FMB with several health physics technicians to identify areas where weekly, monthly, and quarterly contamination surveys were conducted. The inspectors also observed a considerable amount of water puddles in the FMB due to bad weather that caused leaks in the roof and some piping systems. The inspectors observed that the licensee was actively mitigating the water and isolating the affected piping systems. By the third day of the inspection all the visible water and leaks had been dried and repaired.

However, during a walk-down of the North Pad area adjacent to the FMB, the inspectors observed a considerable amount of triuranium octoxide ( $U_3O_8$ ) and uranium tetrafluoride ( $UF_4$ ) contamination on the North Pad area. The inspectors determined from discussions with the licensee, that the licensee routinely stores and cleans equipment in this area. The visible  $U_3O_8$  and  $UF_4$  contamination had accumulated on the North Pad from the cleaning of a boiler condenser that came out of the FMB. The inspectors learned that the area had been left this way for at least a week. This was a violation of the Plant's Health Physics Standard Operating Manual.

Section 4.5.2 of the Health Physics Procedure Manual, "Procedure for Contamination Control," requires, in part, that decontamination spills in uncontained areas be marked off with radiation or safety ribbon to prevent fork trucks or personnel from spreading the contamination.

Contrary to the above, on August 31, 2005, the inspectors identified that the licensee had not marked off with radiation or safety ribbon the North Pad area to prevent fork trucks or personnel from spreading visible  $U_3O_8$  and  $UF_4$  contamination. Failure to implement the procedural requirements for restricting access to a visible contaminated area is a violation (VIO 40-3392/2005-05-04).

(2) Conclusions

A violation was identified for failure to implement procedural requirements for restricting access to a visibly contaminated area.

e. Implementation of ALARA Program (R1.10)

(1) Inspection Scope and Observations

The licensee's ALARA program was reviewed to determine if the program and ALARA goals were developed and implemented in accordance with the license. In addition, the program for reinforcing the ALARA concept among employees was assessed.

On a quarterly basis, the licensee conducted ALARA Committee meetings detailing ALARA goals and exposure summaries to identify undesirable trends. In those cases where exposures were elevated, consideration was given to ways for reducing exposures. The inspectors interviewed the Health Physicist Supervisor assigned responsibility for the ALARA evaluations and assessments associated with external and internal exposures.

The licensee had identified several areas in training, radiation protection and management oversight that needed improvement. These areas were documented by the licensee and are currently being tracked by the NRC (see Attachment 1, Honeywell Matrix Table). Some of these issues identified by the licensee and the NRC had been implemented by the licensee and was entered into their new corrective action system (E-CATS). The system allows the licensee to more efficiently reduce exposure and track trends in the radiation safety program and other areas. In addition, the inspectors noted that the licensee had completed a comprehensive survey of the entire plant in an effort to reduce the footprint of the controlled area. The licensee's footprint reduction plan was currently being reviewed by the corporate office.

Several workers were interviewed regarding ALARA and demonstrated an adequate knowledge and/or understanding of ALARA concepts. From the interviews and review of records, the inspectors determined that the licensee evaluation of the ALARA program was appropriate.

(2) Conclusions

Based on records review and interviews, the inspectors concluded that the licensee's ALARA program was properly implemented.

**5. Exit Meeting Summary**

The inspectors presented the inspection results to members of the plant staff and management at the conclusion of the inspection on September 1, 2005. The plant staff acknowledged the findings presented. Although proprietary documents may have been reviewed during this inspection, the proprietary nature of these documents are not included in this report. No dissenting comments were received from the licensee.

## Attachment 1

**Honeywell Matrix Table**

<b>ISSUE</b>	<b>SOURCE</b>	<b>STATUS</b>	<b>CLOSURE</b>
<b>Procedures</b>			
Implement writers guide	LPR Meeting(2/7/05)	Complete	
New web-based Document Management System	LPR Meeting(2/7/05)	Complete	
New verification and validation process	LPR Meeting(2/7/05)	Complete	
New process for issuing and managing temporary procedures, including V&V	LPR Meeting(2/7/05)	Complete	
New point of contact for implementing procedure changes	LPR Meeting(2/7/05)	Complete	
Create "in-hand" and "reference" procedure categories	LPR Meeting(2/7/05)	Complete	
Complete operating procedure gap analysis	LPR Meeting(2/7/05)	Complete	
Enhance alarm response procedures	LPR Meeting(2/7/05)	Complete	
Develop basic conduct of operations policy	LPR Meeting(2/7/05)		
Implement abnormal condition procedures manual	LPR Meeting(2/7/05)		
Develop "logbook" procedure	LPR Meeting(2/7/05)		
Gap analysis for regulatory affairs/ quality lab areas	Public meeting (9/30/04)		
Gap analysis for maintenance	Public meeting (9/30/04)		
<b>Safety Conscious Work Environment</b>			
Implement survey process for employee feedback on SCWE	LPR Meeting(2/7/05)	2/15/05	
Train employees on meaning of safety conscious work environment; establish employee concerns point of contact	LPR Meeting(2/7/05)	2/15/05	

Conduct employee training on Corporate "hotline;" posters displayed	LPR Meeting(2/7/05)		
<b>Training</b>			
Pre-job briefs training	LPR Meeting(2/7/05)	Complete	
Implement "train-the-trainer" process	LPR Meeting(2/7/05)	Complete	
Create job performance measures for UF6 operators	LPR Meeting(2/7/05)	Complete	
Enhanced new supervisor training process	LPR Meeting(2/7/05)	Complete	
Institute training on Admin Procedure 103 (rev 5); ensure all operators trained on current procedures	Letter dated 1/13/05	2/1/05	
Train managers and union leadership on cultural changes and change management	Letter dated 1/13/05	2/15/05	
Develop supervisory and management training programs	LPR Meeting(2/7/05)		
Develop job performance measures plant-wide with increased validation requirements	LPR Meeting(2/7/05)		
Implement regulatory culture training for management and engineers	LPR Meeting (2/7/05)		
Develop systematic training process with training matrix	Public meeting (9/30/04)		
NRC license training for supervisors and managers	Public meeting (9/30/04)		
Training in labor/employee relations for all supervisors	Letter dated 1/13/05		
<b>Radiation Protection</b>			
Install additional red lights in process areas	LPR Meeting(2/7/05)	Complete	

Increase use of manual posting	LPR Meeting(2/7/05)	Complete	
Improved posting of bed material filter fines restricted areas	LPR Meeting(2/7/05)	Complete	
Review existing radioactive material postings	LPR Meeting(2/7/05)	Complete	
Install "red light" notification system for HP group	LPR Meeting(2/7/05)	Complete	
Replace existing contamination monitoring equipment	LPR Meeting(2/7/05)	Complete	
Initiate immediate work scope assessments for focused tasks	LPR Meeting(2/7/05)	Complete	
Upgrade HP audit program to better focus on housekeeping and contamination control	LPR Meeting(2/7/05)	Complete	
Enhance trending and reporting practices of HP data	LPR Meeting(2/7/05)	Complete	
Create new "E-Council" focusing on environmental improvements	LPR Meeting(2/7/05)	Complete	
Establish financial reserves to pay for legacy waste disposal	LPR Meeting(2/7/05)	Complete	
Conduct radiological survey for entire site to establish new baseline	LPR Meeting(2/7/05)		
Improve response time for field survey results through upgraded equipment	LPR Meeting(2/7/05)		
Improve employee exit monitoring process	LPR Meeting(2/7/05)		
Enhance monitoring process to improve reliability of "free-releasing" equipment	LPR Meeting(2/7/05)		
Enhance survey process for incoming equipment	LPR Meeting(2/7/05)		
Improve housekeeping	LPR Meeting(2/7/05)		

<b>Regulatory</b>			
Split Regulatory Affairs from HS&E and add a staff position	LPR Meeting(2/7/05)		
Prepare matrix of license commitments and link with procedures	Public meeting (9/30/04)		
License renewal	Public meeting (9/30/04)		
Revise/update Risk Management Plan	Public meeting (9/30/04)		
<b>Material Condition</b>			
Implement safe haven control room improvements	LPR Meeting(2/7/05)	Complete	
Complete UF6 and NH3 PHA Revalidation	LPR Meeting(2/7/05)	Complete	
Implement maintenance excellence with Celerant	LPR Meeting(2/7/05)		
Data collection and tracking of mechanical reliability	LPR Meeting(2/7/05)		
Establish data trending (SAP improvements)	LPR Meeting(2/7/05)		
Improve effectiveness of planning and scheduling	LPR Meeting(2/7/05)		
Complete implementation of FMEA improvements	LPR Meeting(2/7/05)		
Finalize critical equipment PM assignments and schedule	LPR Meeting(2/7/05)		
Install distributed control system in UF6 control room	LPR Meeting (2/7/05)		
Implement long-term equipment improvements from corporate reviews	Public meeting (9/30/04)		
Install surface treatment facility	Public meeting (9/30/04)		

<b>Emergency Preparedness</b>			
Conduct periodic table top exercises	Public meeting (9/30/04)		
Conduct annual full participation drills	Public meeting (9/30/04)		
Consolidate ERP and RCP	Public meeting (9/30/04)		
Continue Community Awareness Committee (quarterly)	Public meeting (9/30/04)		
Continue to participate as member of LEPC (quarterly)	Public meeting (9/30/04)		
Continue community bulletin (quarterly)	Public meeting (9/30/04)		
<b>Corrective actions and auditing</b>			
Effectiveness of eCATS implementation will be audited	Public meeting (9/30/04)		
Implement HS&E Council inspection and assessment program (focus team/housekeeping and safety)	Public meeting (9/30/04)		
Individual long-term items will be entered into eCATS	Public meeting (9/30/04)		
Review eCATS to improve identification and capturing of deficiencies, corrective action tracking and sustainability	Letter dated 1/13/05	2/15/05	
Evaluate full-time QA Manager with separate staff	Letter dated 1/13/05		
Establish offsite safety review board	Letter dated 1/13/05		
Develop root cause and investigative skills within plant	Letter dated 1/13/05		
<b>Conduct of Operations</b>			

New standing order process and required reading boards	LPR Meeting(2/7/05)	Complete	
Added on-shift advisors for coaching and mentoring	LPR Meeting(2/7/05)	Complete	
Utilize formal shift turnover briefings	LPR Meeting(2/7/05)	Complete	
Institute formal job hazard analysis process prior to maintenance evolutions	LPR Meeting(2/7/05)	Complete	
Implement control of overtime hours worked by operators	LPR Meeting(2/7/05)	Complete	
Plant-wide communications on management expectations with regard to adherence to plant policies	letter dated 1/13/05	Complete	
Issue guidance letter on restricting overtime and secure union support	letter dated 1/13/05	Complete	
Operator aid process improvement	Public meeting (9/30/04)		
Begin negotiations with union to adopt NRC overtime guidelines	letter dated 1/13/05	1/17/05	
Develop clear standing order on steps to responding to inattentiveness	letter dated 1/13/05	2/10/05	
Reissue HR-4 with better defined definition of "harassment"	letter dated 1/13/05	2/15/05	
Supervisor training on how to respond to policy violations	letter dated 1/13/05	2/15/05	
Include fitness for work component through behavioral observation by supervisors in fitness for duty program	letter dated 1/13/05	2/15/05	
Implement policy prohibiting advance notification of both management and NRC entering facility	letter dated 1/13/05	2/15/05	
Train and communicate expectations of HR-4 policy	letter dated 1/13/05	2/20/05	
Conduct analysis of potential fatigue and shift issue. Establish management oversight and metrics to ensure compliance with overtime policy	letter dated 1/13/05	2/28/05	

Implement revised overtime guidance policy consistent with NRC guidelines	letter dated 1/13/05		
Evaluate shift and manning schedules to reduce operator fatigue	letter dated 1/13/05		
Implement cultural and behavior action plan defined in the short-term action plan	letter dated 1/13/05		
Keep union leadership informed of plant initiatives	letter dated 1/13/05		
Establish a process for evaluating translation of key messages throughout organization	letter dated 1/13/05		
Explore joining INPO ASAP	letter dated 1/13/05		
<b>Management oversight</b>			
Weekend duty assignment for managers and enhanced security checks	LPR Meeting(2/7/05)	Ongoing	
Prescribed time requirements for managers in the field and monitored	LPR Meeting(2/7/05)	Complete	
Plant management review reports on rounds issued by security, shift advisors, and supervisors daily	letter dated 1/13/05	Ongoing	
Honeywell corporate management oversight including milestone reviews	letter dated 1/13/05	Ongoing	
Corporate management involvement in accelerated staffing of management vacancies	letter dated 1/13/05	Ongoing	
Status of corrective actions from 12/22/03 reviewed weekly by CEO	Letter dated 1/13/05	Ongoing	
Review/adjust Nuclear Services organization to ensure management oversight on all shifts	LPR Meeting(2/7/05)		
Management will perform review of progress of long-term items; biannual meeting of overall progress	Public meeting (9/30/04)		
Establish in-depth succession plans to ensure meaningful overlap on critical positions	letter dated 1/13/05		

Evaluate roles and responsibilities of site leadership team and make adjustments as required	letter dated 1/13/05		
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Attachment 2

**3. PARTIAL LIST OF PERSONS CONTACTED**

Licensee

- \*R. Allhouse, Supervisor, Quality Assurance
- \*D. Edwards, Plant Manager
- M. Ginzel, Health Physics Technical Specialist
- \*R. Jeffers, Training Coordinator
- \*J. Johnson, Supervisor, Safety
- \*D. Mays, Manager, Health, Safety and Environmental
- \*S. Patterson, Acting Supervisor, Health Physics

Other licensee employees contacted included engineers, technicians, production staff, security, and office personnel.

\* Denotes those attending the exit meeting

Other Organizations

- M. Childress, Chief, Massac County Fire Department
- O. Troutman, Director, Massac County Emergency Services Disaster Agency

**4. INSPECTION PROCEDURES USED**

- IP 88050      Emergency Preparedness
- IP 83822      Radiation Protection
- IP 86740      Transportation

**5. ITEMS OPENED, CLOSED, AND DISCUSSED**

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
40-3392/2005-05-01	Open	IFI - Verify the performance of a CY 2005 comprehensive audit and the corrective actions to ensure that annual audits are performed in accordance with Section 7.4 of the ERP/RCP (Paragraph 2.a).
40-3392/2005-05-02	Open	IFI - Ensure that the emergency notification roster is maintained current, that control room operators are trained regarding the backup notification system operability, and perform an off-shift drill (Paragraph 2.c).
40-3392/2005-05-03	Open	URI - Review and verify the extent of bioassay tracking system problem and if there are any health and safety implications once the licensee has completed an internal investigation (Paragraph 4.a).

**6. LIST OF ACRONYMS USED**

ALARA	As Low as is Reasonably Achievable
ADAMS	Agency Document Access and Management System
CCA	Certificate of Competent Authority
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CY	Calendar Year
DDE	Deep Dose Equivalent
DOT	Department of Transportation
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
ERP/RCP	Emergency Response Plan and Radiological Contingency Plan
ERT	Emergency Response Team
FMB	Feed Materials Building
HAZMAT	Hazardous Materials Training
HF	Hydrofluoric Acid
IAEA	International Atomic Energy Agency
IFI	Inspector Follow up Item
IP	Inspection Plan
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
rem	Roentgen Equivalent Man
RWP	Radiation Work Permit
SDE	Skin Dose Equivalent
TEDE	Total Effective Dose Equivalent
UF <sub>4</sub>	Uranium tetrafluoride
UF <sub>6</sub>	Uranium Hexafluoride
U <sub>3</sub> O <sub>8</sub>	Triuranium Octoxide
URI	Unresolved Issue
VIO	Violation