



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

July 26, 2011

Mr. Larry Smith
Plant Manager
Honeywell Specialty Chemicals
P.O. Box 430
Metropolis, IL 62960

SUBJECT: NRC INSPECTION REPORT NO. 40-3392/2011-003 AND NOTICE OF VIOLATION

Dear Mr. Smith:

This refers to the inspections conducted from April 1, 2011 to June 30, 2011, at the Honeywell Specialty Chemicals facility. The purpose of the inspections was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of this inspection. On June 9, 2011, the findings were discussed with you and other members of your staff. Also, on July 19, 2011, additional findings were discussed in a telephone conversation with members of your staff.

The inspections consisted of examination of activities conducted under your license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations and with the conditions of your license. 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 three Severity Level IV violations of NRC requirements occurred. The violations were evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>).

The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violations are being cited in the Notice because they were identified by the NRC. You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from

L. Smith

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the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Thank you for your cooperation. If you have any questions, please call me at (404) 997-4418.

Sincerely,

/RA/

Joselito O. Calle, 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. Inspection Report No. 40-3392/2011-003

cc w/encls:
Gary Wright
Emergency Management Agency
Division of Nuclear Safety
Electronic Mail Distribution

L. Smith

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Letter to Larry Smith from Joselito O. Calle dated July 26, 2011

Subject: NRC INSPECTION REPORT NO. 40-3392/2011-003 AND NOTICE OF VIOLATION

Distribution w/encls:

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NOTICE OF VIOLATION

Honeywell Specialty Chemicals
Metropolis, Illinois

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

During NRC inspections conducted from April 1, 2011 through June 30, 2011, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

1. License Condition 18 of NRC License No. SUB-526 states, in part, that the licensee shall conduct authorized activities in accordance with the statements, representations and conditions (or as revised by change and/or configuration management processes as described, therein), in specific documents including the License Application, dated May 12, 2006.

Section 2.6.1 of the License Application states, in part, that Honeywell shall establish a process to identify those process operations that require procedural guidance to ensure proper execution and require that these process operations be conducted in accordance with approved procedures.

Licensee procedure MTW-SOP-ENV-0002, Documentation and Compliance of Radioactive Waste Shipments, Section 5.3.3, requires the licensee to confirm that the intended recipient's license authorizes the type, form, and quantity of by-product material to be transferred.

Section 17, Management of Free Liquids, of Energy Solutions License Number Utah (UT) 2300249, issued by the State of Utah, that authorizes Energy Solutions to transfer, receive, possess, and use radioactive material states in part: "that solid waste received for disposal shall contain as little free standing and non-corrosive liquid as reasonably achievable, but shall contain no more free liquids than one percent of the volume of the waste."

Contrary to the above, on March 10, 2011, the licensee failed to confirm that the intended recipient's license authorizes the type, form, and quantity of by-product material to be transferred. Specifically, the licensee made a solid radioactive waste shipment to the Energy Solutions disposal facility located in Clive, Utah, that upon initial receipt inspection on March 14, 2011, was discovered to contain an amount of free liquid that exceeded one percent of the volume of the waste container.

This is a Severity Level IV violation (Section 6.8.d.4).

2. 10 CFR 40.60(b)(2)(i) requires, in part, that each licensee shall notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed to prevent releases exceeding regulatory limits.

Contrary to the above, on May 9, 2011, the licensee failed to notify the NRC within 24 hours after the discovery of an event in which equipment was disabled or fails to function as designed to prevent releases exceeding regulatory limits. Specifically, on May 8, 2011, at approximately 7:40 a.m. central daylight time (CDT), the licensee

experienced a total power outage at the plant which disabled the vacuum pumps for the air and stack monitors. The NRC was not notified until 11:10 a.m. eastern daylight time (EDT) on May 9, 2011, a period greater than 24 hours.

This is a Severity Level IV violation (Section 6.9.d.7).

3. License Condition 18 of NRC License No. SUB-526 states, in part, that the licensee shall conduct authorized activities in accordance with the statements, representations and conditions (or as revised by change and/or configuration management processes as described, therein), in specific documents including the Emergency Response Plan (ERP), dated May 27, 2005.

Section 6.2.1 of the ERP requires that a public address system be capable of announcing general and emergency messages.

Contrary to the above, prior to June 11, 2010, the licensee failed to maintain the public address system such that it was capable of announcing general and emergency messages in several areas of the plant.

This is a Severity Level IV violation (Section 6.6.d.1).

Pursuant to the provisions of 10 CFR 2.201, Honeywell Specialty Chemicals is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, 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 for each violation: (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, 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, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response 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> to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public 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 bases 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 safeguards 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 26th day of July, 2011

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

INSPECTION REPORT

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2011-003

Licensee: Honeywell International, Inc.

Facility: Metropolis Works (MTW)

Location: Metropolis, IL 62960

Dates: April 1 through June 30, 2011

Inspectors: David Hartland, Senior Fuel Facility Inspector
Jennifer Foster, Fuel Facility Inspector
Robert Prince, Fuel Facility Inspector
Mike Miller, Senior Resident Inspector, Paducah
Regina Russell, Resident Inspector, Paducah

Approved by: Joselito Calle, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Executive Summary

Honeywell Specialty Chemicals NRC Inspection Report 40-3392/2011-003

Routine, announced and unannounced inspections were conducted in the area of, transportation, radioactive waste management, and effluent control and environmental protection, and routine site operations at the Honeywell Specialty Chemicals facility. The inspection involved observation of work activities, a review of selected records and procedures, interviews with plant personnel, and a review of the plant activities. The inspections identified the following aspects of the program as outlined below:

Transportation

- Plant procedures adequately specified the responsibilities of personnel and organizations responsible for the transportation of radioactive materials. Activities associated with the handling and transport of UF₆ cylinders were performed in a safe manner in accordance with approved procedures. Radioactive material shipment manifests were complete and accurately reflected the contents of shipments (Paragraph 2.a).

Radioactive Waste Management

- Personnel responsible for the handling, packaging, preparation, and shipment of radioactive waste materials were knowledgeable of their responsibilities and regulatory requirements associated with these activities. Radioactive material shipping manifests correctly reflected the classification, quantity, and labeling requirements for the respective shipment. Training and qualification records for individuals authorized to approve radioactive material shipments were current. Radioactive material inventory records accurately reflected the various types of radioactive material in storage and their storage locations. One violation was identified for the presence of free liquid in excess of one percent of the volume of the shipping container (VIO 40-3392/2011-003-01) (Paragraph 3.a).

Effluent Control and Environmental Protection

- The inspectors reviewed the Environmental Protection program and determined that it was in compliance with 10 CFR 20 and the license application. No findings of significance were identified (Paragraph 4.a).
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Event Finding

- 10 CFR 40.60(b)(2)(i) requires, in part, that each licensee shall notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed to prevent releases exceeding regulatory limits (VIO 40-3392/2010-003-02) (Paragraph 5.a).

Continued Implementation of Strike Plans During an Extended Strike

- The resident inspectors assigned to the Paducah resident office made routine visits to the Honeywell site. The purpose of these visits was to perform plant observations and to inspect ongoing operations and maintenance activities at the facility. The inspectors noted that operators were knowledgeable of plant status and control room activities were properly performed (Paragraph 7.a).

Attachment:

Partial Listing of Persons Contacted

List of Items Opened, Closed and Discussed

Inspection Procedures Used

List of Documents Reviewed

REPORT DETAILS

1. Summary of Facility Activities

The Honeywell Specialty Chemicals (licensee) uranium conversion facility is located on a 1,100 acre site (60 acres within the fence line) near Metropolis, IL. The licensee is authorized to possess 150 million pounds of natural uranium ore and to convert this material to uranium hexafluoride (UF₆). The uranium conversion process occurs in the Feed Materials Building (FMB). During the inspection, operations were normal.

2. Transportation (IP 86740)

a. Inspection Scope and Observations

The inspection consisted of field observations, discussions with responsible personnel, and a review of selected documents.

Through a review of procedures and discussions with licensee personnel the inspectors determined that the responsibilities and roles of personnel and organizations responsible for the transportation of radioactive materials were adequately described. Training and qualification records for personnel responsible for the preparation and shipment of radioactive material were current.

The inspectors observed the handling, movement, and the preparation and placement of loaded UF₆ cylinders on transport vehicles for outgoing shipments. The handling and movement of cylinders was performed in a controlled manner. Cylinders were prepared and labeled in accordance with approved procedures. Communication and coordination between the cylinder hauler operator and spotters during movement of cylinders was performed in a controlled and deliberate manner. Cylinders were properly secured to transport vehicles with cylinder tamper indicating devices present. Transport vehicles were properly placarded and inspected in accordance with the licensee's program.

Storage areas containing UF₆ cylinders were noted to be properly posted and access controlled in accordance with approved procedures. Cylinders were stored in the proper configuration and cylinder valve covers present as required by approved procedures.

The inspectors reviewed manifests for UF₆ cylinder shipments. Manifests accurately reflected the contents of the shipments and all required supporting documentation was included in the manifests.

The inspectors observed the loading of a railcar destined for the US Ecology facility in Utah. The shipment consisted of crushed empty ore drums. The inspectors noted that adequate measures were implemented while removing the railcar covers and during loading operations. Crane and forklift operations utilized spotters as necessary and observed evolutions were safely performed. The inspectors noted that arrangements had been made to drain residual water from the railcar utilizing the drain line equipped for that purpose. Residual water was collected in a catch container, pumped to a transfer vehicle, and transferred to the onsite liquid waste processing facility. Based on discussions with licensee personnel, the inspectors noted that these measures were implemented as part of the corrective actions resulting from the incident associated with the NOV addressed in this inspection report.

b. Conclusions

Plant procedures adequately specified the responsibilities of personnel and organizations responsible for the transportation of radioactive materials. Activities associated with the handling and transport of UF₆ cylinders were performed in a safe manner in accordance with approved procedures. Radioactive material shipment manifests were complete and accurately reflected the contents of shipments. No findings of significance were identified.

3. **Radioactive Waste Management (IP 88035)**

a. Inspection Scope and Observations

The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities by the inspectors.

The inspectors interviewed responsible personnel concerning the inventory and management of onsite radioactive material. The inspectors noted that responsible personnel adequately maintained a current inventory of the various types of radioactive material in storage and that the inventory accurately reflected radioactive material storage locations. Responsible personnel maintained an updated inventory that tracked the amount of uranium present onsite to ensure compliance with license possession limits.

The inspectors observed radioactive material storage and staging areas. The inspectors noted that uranium-bearing radioactive material in storage consisted primarily of feed material, hard ore, potassium hydroxide (KOH) drums, and filter fines. The inspectors noted that the licensee had made a significant reduction in the number of KOH drums in storage.

Through discussions with licensee personnel and plant observations the inspectors noted that the licensee has continued efforts to reduce the quantity of miscellaneous radioactive waste materials presently stored in onsite radioactive material storage areas. These items included such materials as used equipment and components, scrap metal, and discarded drums. The inspectors observed responsible personnel preparing a rail car for shipment loaded with crushed metal drums. Personnel placed covers on the rail car using a mobile crane. Operations were conducted in a safe manner and movement of the heavy load performed in a controlled manner. The rail car covers were secured in a timely manner upon completion of loading activities.

The inspectors reviewed organizational changes made since the last inspection relating to radioactive waste management program activities. Organizational changes included hiring a new program manager and obtaining the services of a radioactive waste transportation contractor specialist. Based on discussions with licensee personnel the inspectors noted that additional organizational changes are in progress to provide additional support to the radioactive waste management program. The inspectors reviewed the qualifications of personnel with radioactive waste management program responsibilities. No issues were identified. Procedures adequately described the responsibilities and roles of personnel responsible for the handling, preparation, packaging, and transport of radioactive waste materials.

Selected radioactive waste shipment manifests were reviewed for completeness and accuracy. Manifests correctly reflected the classification, quantity, and labeling requirements for the respective shipment. The inspectors reviewed the circumstances relating to a railcar shipment received at the Energy Solutions, Clive, Utah facility on March 14, 2011. The shipment consisted of scrap metal. The disposal site operator determined upon initial receipt inspection that the railcar had a volume of free liquid that exceeded one percent of the volume of the railcar. Energy Solutions' Utah license states that solid waste received for disposal shall contain as little free standing and non-corrosive liquid as reasonably achievable, but shall contain no more free liquids than one percent of the volume of the waste. Licensee personnel subsequently visited the Clive, Utah facility and based on discussions with the disposal site operator and a review of circumstances associated with the railcar shipment concluded that a volume of water in excess of the one percent limit had accumulated in the railcar. The licensee stated rain water was the most likely source of the water. The rain water is believed to have accumulated during onsite loading operations at the licensee's facility. The liquid was processed by the disposal site operator in accordance with procedures. The inspectors reviewed records associated with the shipment and noted that the shipment contained natural uranium ore concentrates in the form of deposited metal oxides. Based on discussions with licensee personnel, the total activity of natural uranium in the shipment, and the physical characteristics of the material, the inspectors noted that there was no impact on the health and safety of the public.

License Condition 18 of NRC License No. SUB-526 states, in part, that the licensee shall conduct authorized activities in accordance with the statements, representations and conditions (or as revised by change and/or configuration management processes as described, therein), in specific documents including the License Application, dated May 12, 2006.

Section 2.6.1 of the License Application states, in part, that Honeywell shall establish a process to identify those process operations that require procedural guidance to ensure proper execution and require that these process operations be conducted in accordance with approved procedures.

Licensee procedure MTW-SOP-ENV-0002, Documentation and Compliance of Radioactive Waste Shipments, Section 5.3.3, requires the licensee to confirm that the intended recipient's license authorizes the type, form, and quantity of by-product material to be transferred.

Section 17, Management of Free Liquids, of Energy Solutions License Number Utah (UT) 2300249, issued by the State of Utah, that authorizes Energy Solutions to transfer, receive,

possess, and use radioactive material states in part: "that solid waste received for disposal shall contain as little free standing and non-corrosive liquid as reasonably achievable, but shall contain no more free liquids than one percent of the volume of the waste."

Contrary to the above, on March 10, 2011, the licensee failed to confirm that the intended recipient's authorizes the type, form, and quantity of by-product material to be transferred. Specifically, the licensee made a solid radioactive waste shipment to the Energy Solutions disposal facility located in Clive, Utah, that upon initial receipt inspection on March 14, 2011, was discovered to contain an amount of free liquid that exceeded one percent of the volume of the waste container.

The inspectors noted that additional individuals responsible for certifying and preparing radioactive waste shipping records and manifests had been authorized since the last inspection. Discussions with personnel responsible for certifying that waste shipments are prepared in accordance with DOT regulatory requirements indicated that personnel were knowledgeable of their responsibilities and regulatory requirements. The inspectors reviewed training and qualification records for those individuals authorized to certify radioactive material shipments and noted that training and qualifications records were current.

b. Conclusions

Personnel responsible for the handling, packaging, preparation, and shipment of radioactive waste materials were knowledgeable of their responsibilities and regulatory requirements associated with these activities. Radioactive material shipping manifests correctly reflected the classification, quantity, and labeling requirements for the respective shipment. Training and qualification records for individuals authorized to approve radioactive material shipments were current. Radioactive material inventory records accurately reflected the various types of radioactive material in storage and their storage locations. A violation of NRC requirements was identified for the presence of free liquid in excess of one percent of the volume of the shipping container (VIO 40-3392/2010-003-01).

4. **Effluent Control and Environmental Protection (IP 88045)**

a. Inspection Scope and Observations

Management Controls

The inspectors interviewed licensee staff on changes in the Environmental Protection program and changes in Environmental Protection management and determined that no significant changes had been made to the program since the last inspection. The inspectors determined that the labor issues at the plant did not decrease effectiveness of the Environmental Protection program.

Program Implementation

The inspectors reviewed the 2010 environmental sampling results for uranium in surface water, sediment, soil, and vegetation and determined that the sampling frequencies and locations were in accordance with the license application. The inspectors reviewed the 2010 quarterly external gamma radiation measurements taken on each side of the facility fence, at the nearest property boundary, at the nearest residence monitor, and at the Metropolis airport. The inspectors determined that the licensee sampling frequency and locations were in accordance with the license application. The inspectors reviewed a sample of the groundwater data sampled quarterly for gross alpha and gross beta as required by the license application.

The inspectors reviewed the 2010 environmental air monitoring results. The inspectors verified that the environmental air monitoring samples were analyzed for uranium weekly and were analyzed for Radium-226 and Thorium-230 on a quarterly timeframe as specified in the license application. The inspectors determined that the 2010 quarterly averages of the environmental air monitoring samples were 63%, 41%, 24%, and 48% of the investigation level of 2×10^{-14} $\mu\text{Ci/ml}$ for quarters 1, 2, 3, and 4, respectively. The inspectors determined that the environmental air monitoring sample at the nearest residence was also less than the investigation level of 3×10^{-14} $\mu\text{Ci/ml}$. The 2010 quarterly averages of the nearest resident air monitor were 21%, 52%, 20%, and 9% of the investigation level for quarters 1, 2, 3, and 4, respectively.

The inspectors interviewed licensee staff on the effects of flooding in the community during April and May 2011. The inspectors determined that the flood waters from the Ohio River did not impact the facility nor did the flood waters have a negative effect on the environmental sampling program.

The inspectors reviewed the 2010 ALARA reports for the first half and second half of the year. The inspectors verified that the ALARA report included the various topics as required by the license application, including effluents and environmental monitoring. The inspectors reviewed meeting minutes from the 2010 quarterly ALARA Committee meetings and determined that the meetings were in compliance with license application in the areas of membership and in discussion topics.

The inspectors reviewed the semi-annual effluent reports for the first and second half of 2010, dated August 24, 2010 and February 22, 2011, and determined that the reports documented the activity released with the effluents and met the intent of 10 CFR 40.65.

Radioactive Liquid Effluents

The inspectors observed the collection of liquid effluents from Outfall 002. The inspectors observed the laboratory sample preparation and analysis of the liquid samples using the Kinetic Phosphometric Analyzer (KPA) and determined the activities were in accordance with approved procedures. The inspectors reviewed daily liquid effluent results in the logbooks between April 1, 2011 and June 7, 2011. The inspectors reviewed monthly average liquid effluent results between January 2010 and May 2011, and determined that the monthly averages were less than the investigation level. The inspectors noted an increasing trend in a review of liquid effluent yearly averages and determined that the licensee had initiated an investigation in the discharge of liquid effluents despite effluent levels less than the investigation level.

The inspectors verified that the licensee did not discharge to the municipal sanitary sewer system.

Radioactive Airborne Effluents

The inspectors observed the collection of airborne effluent stack samples and determined that the collection was in accordance with approved procedures. The inspectors observed the laboratory sample preparation and KPA analysis of the stack samples. The inspectors interviewed the technician on the current revisions of the approved procedure, 'Kinetic Phosphometric Determination of Uranium,' MTW-SOP-HP-0213 Rev. 3 and determined that the technician was knowledgeable.

The inspectors reviewed the airborne effluent results used for screening, 'Health Physics Daily Alpha Accountability Report,' between March 1, 2011, and June 6, 2011. The inspectors determined that the licensee did not exceed the investigation level of three successive samples during this time period and was in compliance with the license application.

Public Dose

The inspectors reviewed the Health Physics Desk Instructions, MTW-DI-HP-0005-R2, Preparation of the Total Annual Dose to the Public Report to Comply with 10 CFR 20.1301, and MTW-DI-HP-0006-R0, Preparation of the Total Annual Dose to the Nearest Resident Report to Comply with 40 CFR 190, both issued since the last inspection.

The inspectors determined that desk instruction MTW-DI-HP-0005-R2 supported 10 CFR 20.1301. The inspectors reviewed the 2010 public dose analysis and determined that the licensee conducted operations so that the total effective dose equivalent to individual members of the public from the licensed operation did not exceed 0.1 rem in a year. The 2010 dose estimate was conservatively calculated to be 0.055 rem in a year, less than the regulatory limit. The dose estimate included the airborne effluents, the liquid effluents, and external radiation at the North property boundary.

The inspectors determined that desk instruction MTW-DI-HP-0006-R0 met the requirements in 40 CFR 190.10 as required by the license application. The inspectors reviewed the 2010 public dose analysis, calculated for 40 CFR 190.10, and determined that licensee operations were conducted in such a manner as to provide reasonable assurance that the annual dose equivalent did not exceed 0.025 rem to the whole body. The dose estimate included the airborne effluents, the liquid effluents, and external radiation at the nearest resident. The 2010 dose estimate was estimated to be 0.0156 rem in a year, less than the regulatory limit cited in 10 CFR 190.10.

Procedures

The inspectors reviewed the following procedures which had been revised since the last inspection: "Radiological Protection Program," MTW-ADM-HP-0100 Rev. 3, "Control of Gaseous Effluents," MTW-SOP-HP-0104 Rev. 6, and "Collecting Environmental Samples," MTW-SOP-HP-0209 Rev. 3. The inspectors determined that the procedures adequately supported 10 CFR 20 and the license application.

The inspectors reviewed MTW-SOP-HP-0213, Rev 3, "Kinetic Phosphometric Determination of Uranium," and observed the implementation of Section 5.3, Accountability Sample Preparation. The procedure had been revised to include an acceptable range for the analytical result or data output from the Kinetic Phosphometric Analyzer (KPA), instructions for the initial dilution of the samples, and included the sample preparation reference sheet. The inspectors interviewed the technician on the current revisions of the approved procedure, MTW-SOP-HP-0213 Rev. 3, and determined that the technician was knowledgeable.

Identification and Resolution of Programs

The inspectors reviewed a summary of the Incident Reports logged in the corrective action program. The inspectors reviewed incident reports, IR-11-0967, IR-11-1072, IR-11-1085, and IR-09-2526, in detail and determined that they were adequate. IR-11-1329 was opened the week of the inspection.

b. Conclusions

The inspectors reviewed the Environmental Protection program and determined that it was in compliance with 10 CFR 20 and the license application. No findings of significance were identified.

5. Event Finding

a. Inspection Scope and Observations

On May 8, 2011, at approximately 7:40 a.m. central daylight time (CDT), the licensee experienced a total power outage. The licensee determined that the loss of power to the site was due to a loss of power at the Joppa electrical substation. The air monitoring vacuum pumps for the air and stacks monitors were not available during the power outage. The air and stacks monitors are safety equipment required by the license application to detect a release of radioactive material that could exceed regulatory limits. The licensee followed the power failure procedures and conducted a plant census to account for all personnel. The power was rerouted through Metropolis and restored to the plant at approximately 9:00 a.m. CDT. The licensee determined the loss of power to the plant had no other impacts on plant safety and normal offsite power had been re-established. The licensee notified the NRC of the disabled safety equipment at 11:10 a.m. eastern daylight time (EDT) on May 9, 2011. This was a period greater than 24 hours.

10 CFR 40.60(b)(2)(i) requires, in part, that each licensee shall notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed to prevent releases exceeding regulatory limits.

Contrary to the above, on May 9, 2011, the licensee failed to notify the NRC within 24 hours after the discovery of an event in which equipment was disabled or fails to function as designed to prevent releases exceeding regulatory limits. Specifically, on May 8, 2011, at approximately 7:40 a.m. CDT, the licensee experienced a total power outage at the plant which disabled the vacuum pumps for the air and stack monitors.

b. Conclusion

10 CFR 40.60(b)(2)(i) requires, in part, that each licensee shall notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed to prevent releases exceeding regulatory limits. The NRC was not notified until 11:10 a.m. EDT on May 9, 2011, a period greater than 24 hours. This violation is identified as (VIO 40-3392/2010-003-02).

6. **Continued Implementation of Strike Plans (92711)**

a. Inspection Scope and Observations

The resident inspectors assigned to the Paducah resident office made routine visits to the Honeywell site. The purpose of these visits was to perform plant observations and to inspect ongoing operations and maintenance activities at the facility. The inspectors noted that operators were knowledgeable of plant status and control room activities were properly performed. The inspectors evaluated the material condition and housekeeping of plant areas.

The inspectors observed control room operations to determine whether proper control room staffing was maintained, access to the control room was properly controlled, and operations conducted in a manner commensurate with the plant configuration and plant activities in progress. The inspectors examined the status of selected control room annunciators, instrumentation, and computer controllers to identify abnormalities and to determine the plant status. The inspectors reviewed control room and plant shift superintendent log books, daily operating instructions, and corrective action program entries to obtain information concerning operating trends and activities.

The inspectors observed selected maintenance activities in the field to determine if maintenance and surveillance activities were completed in accordance with approved work documents. Inspection activities consisted of observations, conducting reviews, and interviewing maintenance personnel. Maintenance activities were evaluated to determine the adequacy of the reliable operation of the plant's safety systems and if activities were performed in accordance with regulatory requirements. The inspectors attended selected 9:00 a.m. morning standup meetings between the plant manager and his staff to determine the safety status and current operations of the plant.

The inspectors followed up on a shipment of solid radioactive waste in a gondola railcar container with liquid that exceeded the one percent liquid limit requirements for shipment. The inspectors reviewed manifest and shipping papers, and conducted interviews to evaluate the licensee's action prior to the shipment of solid radioactive waste to a licensed disposal facility.

The inspectors evaluated out-going product cylinder shipments for compliance with applicable requirements. The inspectors reviewed the truck placarding, shipment labeling and documentation, shipment radiation surveys and transportation indices, and drivers' knowledge for the shipments.

b. Conclusion

The resident inspectors assigned to the Paducah resident office made routine visits to the Honeywell site. The purpose of these visits was to perform plant observations and to inspect ongoing operations and maintenance activities at the facility. The inspectors noted that operators were knowledgeable of plant status and control room activities were properly performed.

7. **Closed Unresolved Item 40-3392/2010-002-04**

a. Inspection Scope and Observations

NRC's Office of Investigations performed an investigation and NRC staff concluded that the evidence did not support that individual(s) deliberately damaged PA system loud speakers. However, as documented in Inspection Report 40-3392/2010-002, three NRC inspectors walked down several interior and exterior areas throughout the licensee's facility including in and around the gaseous fluorine plant, the environmental protection facility, the road between the FMB and the sulfur hexafluoride (SF₆) production building, the south pad adjacent to the FMB and within the FMB itself, including the UF₆ fill station and other areas on the first floor. The use of three inspectors reduced the possibility that differences in aural acuity would skew the inspection observations. The inspectors either listened for announcements that were routinely made on the PA system or created test messages and monitored the announcements to determine if they were audible and understandable.

At several points in each of the plant areas specified above, the inspectors determined that messages made on the PA paging system were either completely inaudible or were insufficiently loud enough to be understood. In several places, loudspeakers were observed to be inoperable. Discussions with licensee personnel indicated that while some loudspeakers were abandoned in place, others were, in fact, not functional. The inspectors concluded that the PA system components located in these areas were not functioning properly and individuals present in these areas would have either not heard or not understood any announcements made, including emergency announcements.

License Condition 18 of NRC License No. SUB-526 states, in part, that the licensee shall conduct authorized activities in accordance with the statements, representations and conditions (or as revised by change and/or configuration management processes as described, therein), in specific documents including the Emergency Response Plan (ERP), dated May 27, 2005.

Section 6.2.1 of the ERP states, in part, "that a public address (plant paging) system accessed by phone is used for announcing general and emergency messages." The ERP further states that during an emergency, the PA/paging system was used by the licensee to activate emergency response personnel and notify plant staff of the need to evacuate affected areas and report for accountability. The inspectors noted that other means used to notify plant staff (i.e., telephones and radios) was not readily available in some process areas.

b. Conclusion

The failure to maintain the PA system capable of announcing general and emergency messages that would be heard by individuals located throughout the plant is a violation (VIO 40-3392/2011-003-03, Failure to Maintain PA System).

8. Follow-up on Events

The following discussion pertains to the following event notifications; 46764, 46781, and 46831.

a. Inspection Scope and Observations

Between April 16, 2011, and May 8, 2011, the licensee lost function on the vacuum pumps which controlled the air sampling equipment a total of three times. The loss of function in each case was initiated by three separate causes; however, the result of the loss of function was the same. Event Notification (EN) 46764 (LER 2011-006-0) pertains to a loss of function of the vacuum pumps for approximately thirty minutes on April 16, 2011. The vacuum pumps were disabled when the primary water source for the pumps was shutdown for the Annual Maintenance Shut Down, and the back flow preventer in the sanitary water supply line (back up water source) malfunctioned resulting in interruption of flow to the pump seals. EN 46781 (LER 2011-007-0) pertains to a lost of function of the vacuum pumps for three hours on April 23, 2011. The loss of function was due to a severe windstorm which blew down an electrical power pole inside of the plant property. EN 46831 (LER 2011-010-0) pertains to a loss of function of the vacuum pumps for approximately two hours on May 8, 2011, due to a plant-wide power outage caused by a loss of power at the Joppa electrical substation.

The inspectors interviewed licensee staff on the three separate vacuum pump malfunction incidents, reviewed Incident Reports, reviewed a presentation of the storm damage at the MTW from the April 23, 2011 storm, reviewed memoranda titled "Estimation of Uranium Loss to Air During Incidents of HP Pump Failure," and observed the current functioning vacuum pump. The inspectors determined that FMB Air Sampling East Vacuum Pump, P-127, was functioning properly when observed and that FMB Air Sampling West Vacuum pump, P-128, was functional but not in service. The Incident Reports, IR-11-0967, IR-11-1072, and IR-11-1085 for EN 46764, EN 46781, and EN 46831, respectively, were determined to be adequate. Through interview, the inspectors determined that the process equipment in the FMB was shutdown either for the annual scheduled maintenance shutdown or due to electrical power outages at the plant for each instance. Although the process equipment was shutdown, workers continued maintenance work during the time periods of vacuum pump failures. Room air samplers and effluent stack monitoring would normally be operational during maintenance work despite process equipment shutdown.

The inspectors determined that the three causes for the loss of equipment failure were unrelated and did not demonstrate a problem at the facility. The inspectors determined that the vacuum pump was working properly during the inspection.

During each event, the vacuum pump failure resulted in a loss of air sampling equipment in the Feed Material Building (FMB). Despite being a requirement of license application SUB 526 Section 3.2.2, Honeywell did not provide continuous workroom air sampling in this area. Instead, in each of the three instances of equipment failure, the workers were

required by administrative control to use their respiratory protective equipment when the air samplers were lost. The inspectors determined that the air sampling program at Honeywell was designed to control the use of respirators and was not used to determine internal occupational dose. As the workers were conservatively required to wear respirators while the air sampling equipment was shutdown, the inspectors determined that the intent of the license application was met. The inspectors determined that health and safety were not affected. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

During each event, the vacuum pump failure resulted in a loss of airborne effluent stack monitoring equipment. Despite being a requirement of license application SUB 526 Section 4.1.2, process stacks were not continuously sampled to measure the uranium emission rate. Instead, the licensee conservatively estimated the emission during the period of equipment failure using the emission rate from directly before and after the equipment loss and the total time period that the stacks were not monitored. The airborne effluent records were adjusted to reflect the gap in sampling equipment operation. The inspectors determined that the emission estimations for each of the time periods were less than five percent of an average daily effluent sample. Due to the adjustment of the airborne emission records and the small total emissions during these time periods, the inspectors determined that health and safety were not affected. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

b. Conclusions

The inspectors determined that the three causes for the loss of equipment failure were unrelated and did not demonstrate a problem at the facility. The inspectors determined that the vacuum pumps were working properly during the inspection. The inspectors determined that the loss of air sampling equipment and the loss of airborne effluent stack sampling equipment did not impact health or safety. The inspectors did not identify any violations of safety significance. Event Notifications 46764, 46781, and 46831 are closed. No findings of significance were identified.

9. Follow-up on Previously Identified Issues

a. (Closed) Inspector Follow-up Item 40-3392/2010-002-06 Environmental air sampler exceeded the investigation level in the fourth quarter.

Inspector Follow-up Item 2010-002-06 pertains to the 2009 fourth quarter results from the environmental air samplers at the fence line. The fourth quarter average was 2.28×10^{-14} $\mu\text{Ci/ml}$; a result above the investigation limit of 2.0×10^{-14} $\mu\text{Ci/ml}$. The licensee had not completed the investigation prior to the 2010 NRC inspection. During the current inspection period, the inspectors reviewed the investigation conducted by the Radiation Protection department. The inspectors determined that the investigation cross referenced the periods of higher airborne concentrations at the fence line, as determined by the fence line air samplers, with emission rates from the FMB and other sources. The investigation determined that the spikes in the environmental air sampler results in 2009 fourth quarter were not driven by the FMB emission rates. The investigation determined that the increased environmental air sampling data was a result of nearby waste handling activities. The environmental fence line air samplers were below the investigation level for each quarter of 2010.

No findings of significance were identified. Inspector Follow-up Item 40-3339/2010-002-06 is closed.

- b. (Discussed) Violation 40-3392/2009-004-02 Insufficient collection and analysis of effluent samples from the storm water outfalls 003, 004, and 005 and the failure to include these effluents in the calculation of the public dose.

The inspectors reviewed monthly storm water sampling results from July 2010 to December 2010, and determined that the results were incorporated in the semi-annual effluent report and in the 2010 annual public dose assessment. The inspectors determined that the analysis of the storm water data was adequate. The inspectors reviewed Incident Report IR-09-2526 and determined it was adequate. The inspectors interviewed licensee staff on the collection of the storm water. The inspectors were unable to review the inclusion of storm water sampling in approved procedures. The storm water collection procedure reviewed and discussed in NRC Inspection Report 40-3392/2010-002 titled "Outfall Sampling" by contractor CH2M HILL was not utilized in the collection of the storm water between July and December 2010 and was determined by the inspectors to no longer be relevant. The inspectors were unable to close the violation due to the absence of storm water sampling in approved procedures. VIO 40-3392/2009-004-02 will remain open.

- c. (Closed) Inspector Follow up Item 40-3392/2007-002-03 Licensee upgrading and formalizing the HP procedures supporting the environmental protection and the radioactive waste management procedures.

The inspectors reviewed procedures related to the radioactive waste management program and found that the procedures contained sufficient detail to adequately address regulatory requirements associated with the program. Based on discussions with licensee personnel and field observations the inspectors found that program requirements were implemented in accordance with approved procedures.

The inspectors reviewed the revisions to MTW-SOP-HP-0213, Rev. 3, Kinetic Phosphometric Determination of Uranium, and determined that the procedure was adequate. The inspectors interviewed a technician on the current revisions of the approved procedure and determined that the technician was knowledgeable of the procedural requirements.

No findings of significance were identified. Inspector Follow-up Item 40-3392/2007-002-03 is closed.

10. **Exit Meeting**

The inspection scope and results were summarized on June 9, and July 19, 2011, with Larry Smith, Plant Manager, and other members of the licensee's staff. Although proprietary information was reviewed during this inspection, proprietary information is not included in this report.

ATTACHMENT

1. LIST OF PERSONS CONTACTED

M. Abel, Health Physics Specialist
S. Anderson, Training
J. Assad, CAP Administrator
T. Barnes, Maintenance Manager
D. Bilski, Security Manager
B. Burgess, Health Physics Specialist
B. Crockett, Environmental
J. Cybulski, Site Services Manager
G. Disinger, Reliability Engineering Manager
J. King, Environmental manager
L. Litinski, Regulatory Affairs
B. McBee, Safety Manager
M. Mena, Quality Assurance Supervisor
D. Palmer, Operations Manager
S. Robinson, Laboratory Supervisor
P. Rolnicki, Site Services
R. Rutledge, Enercon, Radioactive Waste Management
L. Smith, Plant Manager
B. Stokes, Health Physics Manager
R. Thomas, Environmental Supervisor
M. Wolf, Nuclear Compliance Director

Other licensee employees contacted included operation, management staff, engineers, HP-technicians, security and office personnel.

2. INSPECTION PROCEDURES USED

IP 88045	Effluent Controls and Environmental Protection
IP 88035	Radioactive Waste Management
IP 86740	Transportation
IP 92711	Continued Implementation of Strike Plans During An Extended Strike

3. ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item</u>	<u>Status</u>	<u>Description</u>
IFI 40-3392/2007-002-03	Closed	Upgrading and formalizing procedures supporting environmental protection and the radioactive waste management programs.
VIO 40-3392/2009-004-02	Discussed	Failure to collect and analyze effluent samples for storm water outfalls 003, 004, and 005 and the failure to include these effluents in the calculation of the public dose.

EN 46764 (LER 2011-006-0)	Closed	Air monitoring vacuum pumps disabled.
EN46781 (LER 2011-007-0)	Closed	Loss of power shuts down air monitoring vacuum pumps.
EN 46831 (LER 2011-010-0)	Closed	24 hour report due to loss of vacuum pumps for air and stack monitoring.
IFI 40-3392/2010-002-06	Closed	Environmental air sampler exceeded the investigation level in the fourth quarter.
URI 40-3392/2010-002-04	Closed	Failure to maintain the public address (PA) system.
VIO 40-3392/2011-003-01	Opened	Failure to ensure that radioactive waste shipments do not contain a volume of free standing liquid in excess of 1% of the volume of the shipment.
VIO 40-3392/2011-003-02	Opened	Failure to notify the NRC within 24 hours after an event in which equipment was disabled or fails to function as designed to prevent releases exceeding regulatory limits.
VIO 40-3392/2011-003-03	Opened	Failure to maintain the public address (PA) system.

4. LIST OF DOCUMENTS REVIEWED

LIC-SUB-526 - Integrated Safety Analysis Summary, Rev. 2, Dated June 17, 2010
 Honeywell MTW Safety Demonstration Report, Rev. 7, Dated April 23, 2010
 Procedure MTW-SOP-UF6C-0217, UF₆ Cylinder Shipping and Receiving Inspection, Rev.0
 Procedure MTW-SOP-UF6C-0216, UF₆ Cylinder Related Yard, Rev. 0
 Procedure MTW-QAM-UF6-0219, QAM-UF6 Section 19-UF6 Cylinder Shipping, Rev. 2
 Procedure MTW-ADM-UF6C-0224, UF₆ Cylinder Database, Rev. 0
 Procedure MTW-ADM-ENV-0100, Waste Management, Rev. 0
 Procedure MTW-ADM-ENV-0101, Environmental Shipment of Waste
 Procedure MTW-SOP-ENV-0001, Packaging, Labeling, Marking, and Surveying of
 Radioactive Waste Shipments, Rev. 0
 Procedure MTW-SOP-ENV-0002, Documentation and Compliance of Radioactive Waste
 Shipments
 Procedure MTW-ADM-HP-0100, Radiological Protection Program, Rev. 3
 Procedure MTW-SOP-HP-0213, Kinetic Phosphometric Determination of Uranium, Rev. 3
 Procedure MTW-SOP-HP-0104, Control of Gaseous Effluents, Rev. 6
 Procedure MTW-SOP-HP-0209, Collecting Environmental Samples, Rev. 3
 MTW-DI-HP-0005-R2, Preparation of the Total Annual Dose to the Public Report to Comply
 with 10 CFR 21.1301
 MTW-DI-HP-0006-R0, Preparation of the Total Annual Dose to the Nearest Resident
 Report to Comply with 40 CFR 190
 License Number UT 2300249, Amendment 4, Expiration Date January 25, 2013, Utah
 Department of Environmental Quality, Division of Radiation Control, Radioactive
 Material License
 Energy Solutions, Bulk Waste Disposal and Treatment Facilities Waste Acceptance
 Criteria, Rev. 6
 IR-11-0967

IR-11-1072
IR-11-1085
IR-09-2526
IR-11-1329