



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

November 10, 2010

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

SUBJECT: NRC INSPECTION REPORT NO. 40-3392/2010-002 AND NOTICE OF VIOLATION

Dear Mr. Smith:

This letter refers to the inspection conducted from June 7 through September 9, 2010, at the Honeywell Specialty Chemicals facility in Metropolis, IL. The purpose of the inspection was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. On June 11, June 18, June 23, July 1, July 13, August 25, September 2, September 9, and October 1, 2010, the findings were discussed with members of your staff.

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. The areas examined during the inspection were the environmental protection program, strike contingency plans, and operator training and operational safety in relation to the strike preparation. 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 that may be found 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 the violation are described in the subject inspection report. The violations are being cited in the Notice because they were identified by the NRC. The first violation is for the failure to provide the Total Effective Dose Equivalent (TEDE) for public dose assessments; the second violation is for the failure to properly conduct investigations for process stack exceedances; and the third violation is for the failure to properly protect the security of training test materials along with the failure to prevent coaching during on-the-job evaluations. If you contest the violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk,

L. Smith

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Washington DC 20555-0001, with copies to: (1) the Director, Office of Nuclear Material Safety and Safeguards, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In addition to the violations already discussed above, the enclosed inspection report documents two unresolved items (URI). The first URI concerns the apparent failure to maintain the public address system to ensure it would be able to carry out its intended purpose in the event of a plant emergency. The second URI concerns the apparent failure to properly restore heat trace power, which eventually may have contributed to a small uranium hexafluoride leak within the confines of the Feeds Material Building. Both of these matters remain under NRC review and no response is required. However, upon learning of the heat trace event, plant management directed that a root cause analysis investigation be conducted to better understand the circumstances that led to this event, to identify the root and contributing causes and propose appropriate corrective actions. It is requested that you provide the NRC a copy of the report documenting the results of the root cause analysis.

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 your response, please provide information regarding the corrective actions of this issue; specifically how reportable events will be determined in the future. The corrective actions will be verified in a subsequent inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosures 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>.

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

Sincerely,

/RA/

Joselito O. Calle, Acting 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

cc w/encls: (See page 3)

L. Smith

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

Distribution w/encls:

T. Hiltz, NMSS
J. Henson, RII
J. Calle, RII
T. Liu, NMSS
D. Hartland, RII
J. Pelchat, RII
R. Prince, RII
M. Miller, RII
R. Russell, RII
M. Crespo, RII
L. Pitts, RII

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ADAMS: X Yes ACCESSION NUMBER: _____ X SUNSI REVIEW COMPLETE

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NOTICE OF VIOLATION

Honeywell Specialty Chemicals
Metropolis, IL

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

During an NRC inspection conducted June 7 through September 9, 2010, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

1. 10 CFR 20.1302(b)(1) states, in part, that each licensee shall show compliance with the annual dose limit in 10 CFR 20.1301 by demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit.

10 CFR 20.1301(a)(1) states, in part, that each licensee shall conduct operations so that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year.

Contrary to the above, the licensee failed to show compliance with the annual dose limit in 20.1301 by demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit. As of June 11, 2010, the licensee had not included the liquid effluent or external dose components of the total effective dose equivalent in the public dose analysis but had characterized the airborne effluent dose analysis as the total public dose analysis.

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

2. License Condition 18 of NRC License No. SUB-526, Amendment No. 5, states, in part, that the licensee shall conduct authorized activities at the Honeywell Metropolis Works Facility in accordance with the statements, representations and conditions in Chapters 1 through 7 of the license application dated May 12, 2006, as supplemented by letters dated March 20, 2007, and May 12, 2008.
 - a. Section 4.1.1 of the license application requires that an investigation limit shall be established for each dust collector stack (usually 5,000 disintegrations per minute for secondary dust collectors). If the quantity released from the stack exceeds the investigational limit on three successive samples, an investigation shall be conducted to identify the source and required corrective actions.

Contrary to the above, beginning in January 2009, the licensee routinely identified dust collector stack samples which were above the investigation limits for three successive samples and failed to initiate an investigation to identify the source and required corrective actions. Specifically, on January 3, 2009, January 14, 2009, February 5, 2009, February 7, 2009, February 15, 2009, January 8, 2010, and January 16, 2010, the licensee experienced stack exceedances on the third successive sample and investigations were not conducted to identify the source and required corrective actions.

Enclosure 1

In addition, on February 15, 2009, February 17, 2009, February 24, 2009, and May 24, 2010, the licensee experienced stack exceedances on the third successive sample and an investigation was conducted. However, the investigation did not properly identify the source or identify required corrective actions.

- b. Section 2.5.3 of the application states, in part, that individuals who routinely monitor plant parameters and manipulate controls associated with licensed material processing are referred to as Chemical Operators and that Honeywell shall provide initial training and continuing training for Chemical Operators in accordance with established plant policies and procedures. Training procedures for chemical operators are described in Procedure MTW-ADM-TRN-0701, "CONDUCT OF TRAINING."
 - i. Section 4.4 of Procedure MTW-ADM-TRN-0701 requires that strict control be maintained of written examinations, related answer keys, examination banks, Job Performance Measures, and all other examination instruments.
 - ii. Item 4.6.8.2 states that the evaluator will ensure no coaching occurs during On-the-Job Evaluations (OJE).

Contrary to the above, on August 5, 2010, the licensee failed to maintain strict control over examination materials. Specifically, a number of operator candidates entered a room during the course of an oral evaluation of another candidate, affording them opportunity to hear and listen to oral evaluation questions prior to their own examination. Further, a number of operator candidates were permitted to observe another operator candidate as he performed his OJE, thus compromising the task performance portion of the OJE.

Also, contrary to the above, evaluators coached operator candidates during the course of OJEs. Specifically, an evaluator coached during an OJE when:

- the evaluator showed the candidate the locations of several components when the candidate was unable to locate them;
- the evaluator showed the candidate where the candidate was in the procedure; and,
- the evaluator helped the candidate follow the procedure when the candidate became confused.

These violations are examples of a Severity Level IV problem (Supplement VI).

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 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 violations, 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 previously 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 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 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 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 10th day of November, 2010

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2010-002

Licensee: Honeywell Specialty Chemicals

Facility: Metropolis Works (MTW)

Location: Metropolis, IL 62960

Dates: June 7 – September 9, 2010

Inspectors: John Pelchat, Senior Fuel Facility Inspector
Jennifer Foster, Fuel Facility Inspector
Robert Prince, Fuel Facility Inspector
Michael Miller, Senior Resident Inspector
Regina Russell, Resident Inspector
Manuel Crespo, Senior Fuel Facility Inspector
Leonard Pitts, Fuel Facility Inspector

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

Enclosure 2

EXECUTIVE SUMMARY

Honeywell Specialty Chemicals
NRC Inspection Report 40-3392/2010-002

This inspection included activities conducted by region-based inspectors and included both normal and backshift inspections in the areas of safety operations and radiological controls.

This inspection included aspects of licensee activities regarding the preparation of strike contingency plans, placing plant systems in a safe configuration prior to dismissal of plant personnel, and observation of plant operations performed by temporary workers. The inspection also included a review of the environmental and effluent monitoring programs.

Safety Operations

- The licensee developed and implemented a strike contingency plan to ensure orderly and safe shutdown of the plant. Plant operations were safely secured after the licensee made the decision to lockout bargaining unit employees. The licensee then safely resumed licensed activities in accordance with its strike plan (Paragraph 2.a).
- The licensee had developed an adequate training and qualification program for salaried and other temporary workers to support the safe operation of the ore production and green salt facilities. Training and qualification requirements were adequately addressed in approved procedures. Oral boards and job performance measures were conducted in accordance with approved procedures and addressed key knowledge elements of applicable component and system operations. However, during training to support restart of fluorination and distillation, two examples of failure to maintain strict control of on-the-job evaluations (OJE) and other examination instruments along with the failure to ensure that OJE candidates were not coached were identified as violations. (Paragraph 2.b)
- Operators were knowledgeable of their responsibilities and the operation of systems and components that they were qualified to operate. Temporary workers were knowledgeable of their responsibilities and were adequately trained and qualified to perform their assigned duties. Strict procedural compliance was noted on the part of operations personnel. Operators were knowledgeable of operational parameters and actions to be taken in the event that an out-of-tolerance condition was encountered. Field activities were adequately performed to maintain safe operation of the plant. However, two URIs were identified regarding the failure to maintain the public address system and the failure to properly restore UF₆ heat trace power. (Paragraph 2.c)

Radiological Controls

- The licensee's failure to conduct appropriate investigations and to properly perform assessments of public dose resulting from airborne effluent stack exceedances were identified as violations. (Paragraph 3.a)

Attachment

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed

List of Documents Reviewed

REPORT DETAILS

1. Summary of Plant Status

The Honeywell Specialty Chemicals (licensee) Metropolis Works (MTW) 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).

The licensee performed routine licensed operations during the environmental protection inspection on June 7-11, 2010.

The licensee initiated strike preparation plans during the first quarter of 2010 and provided periodic updates regarding the status of contract negotiations to DFFI throughout the period leading up to the contract termination date of June 21, 2010. The licensee-developed strike contingency plan was submitted to NRC for review. The plan included provisions to perform limited operations of the plant in the event that contract negotiations could not be completed prior to the contract termination date. The strike contingency plan provided details concerning the training and qualification of temporary workers to support plant operations in the event that contract negotiations were not completed.

On June 28, licensee management informed the onsite inspectors that the decision had been made to lock-out bargaining unit employees later that day. Employees arriving for the evening shift beginning at 6:30 p.m. on June 28 were subsequently escorted from site. The plant was safely shut down and on June 29, the inspectors initiated continuous, around-the-clock, coverage. That continuous coverage was maintained for a 72-hour period after the restart of the ore preparation (ore prep) and hydrofluorination (green salt) processes. Temporary work crews initially consisted of salaried MTW personnel and later transitioned to a combination of MTW and other Honeywell salaried staff and supervisors supplemented with temporary contractors.

On September 4, the inspectors initiated continuous, around-the-clock, coverage as the licensee resumed fluorination and, approximately 36 hours later, distillation followed by the resumption of product cylinder filling. That continuous coverage was maintained for a 72-hour period after the restart of the distillation process.

2. Safety Operations

a. Licensee Strike Contingency Plans (92709)

(1) Inspection Scope

The inspection consisted of a review of the licensee's strike contingency plan and supporting implementation schedule. The inspection consisted of a review of the status of the licensee's contingency planning, a review of supporting documentation, interviews and discussions with responsible personnel, and field observations.

(2) Observations and Findings

The inspectors reviewed the licensee's strike contingency plan and discussed the implementation plan with licensee management. The inspectors also reviewed details associated with actions in progress necessary to implement the plan. Licensee plans adequately addressed staffing requirements and necessary actions to ensure that plant systems were placed in a safe configuration and to support safe shutdown in the event of a strike. The fluorination and distillation processes were shutdown a number of days before June 21, in anticipation of a possible work stoppage, while the licensee continued to operate the ore prep and green salt processes.

In meetings with the plant manager and other senior licensee management before the June 21 contract expiration date, the inspectors discussed the anticipated impact of a potential work stoppage and compensatory measures that the licensee had developed for coping with the safety impacts of such a stoppage. Specifically, the inspectors reviewed the licensee's assumptions in developing these compensatory measures including:

- the number and job classifications of potential strikers;
- the readiness of the safety contingency plan submitted to NRC for its review;
- the assumed duration of any work stoppage;
- processes for training and qualifying sufficient staff for safety-critical positions adequate for the assumed duration; and,
- considerations for safe operations if the duration of the work stoppage exceeded the anticipated duration.

The inspectors interviewed plant management personnel and reviewed the licensee's provisions for ensuring that overtime and duty hours were appropriately managed to minimize the impact of fatigue on plant personnel during the course of a potentially extended labor dispute. The licensee had plans implemented to ensure that safety and security-critical plant staff were adequately rested and that there were a sufficient number of employees available to sufficiently staff three shifts. The inspectors verified that the licensee's plans provided for a sufficient number of personnel to staff the following functional areas:

- operations;
- maintenance;
- health physics & industrial hygiene;
- emergency response;
- quality assurance; and,
- security.

The inspectors interviewed the security manager and senior officers of the uniformed security force and determined that hourly members of the uniformed guard force were represented by a separate union and that the contract between the licensee and the guard union contained a no-strike clause that compelled members of the hourly guard force to cross any picket line and continue performing their assigned duties in the event of a work stoppage. Private interviews with individual members of hourly guard staff verified that their contract did contain a contractual commitment for them to continue working in the event of a labor dispute. Each guard interviewed stated that they

intended to honor the terms of their labor contract in the event that the union representing the hourly operations and maintenance staff was not able to reach a labor accord with licensee management.

Discussions with representatives of plant management indicated that if the licensee experienced or anticipated a prolonged work stoppage, arrangements had been made to contract with Shaw Group, Inc for temporary workers to fill vacated hourly operations and maintenance positions. The inspectors emphasized that the training and qualifications of all personnel filling safety-critical positions would be reviewed to verify that their training conformed to the requirements in Honeywell's license and plant procedures. During the period prior to the expiration of the contract, the inspectors reviewed a representative sample of records documenting the various aspects of the licensee's training program including class room training, on the job training, practical examination, and oral qualification interviews. At that given point of time, the inspectors determined that the licensee was making adequate progress in identifying and qualifying a sufficient number of individuals to staff two shifts and, later, three shifts. The inspectors verified that content and curriculum of training for salaried and other temporary operations and maintenance personnel satisfied the requirements specified in the NRC license. The inspectors verified that the licensee had anticipated and was training a sufficient number of individuals to staff the emergency response team (red hats) to provide a sufficient number of responders as required in the license. Additional specific inspection findings regarding the implementation of the licensee's contingency training program are detailed in paragraph 2.b below.

Interviews of plant personnel indicated that the licensee had also contacted and made arrangements for continued support from:

- the Illinois state police;
- the Massac County Sheriff's Office;
- city and county fire departments; and,
- Massac Memorial Hospital in Metropolis, IL.

The inspectors interviewed plant managers and determined that the arrangements described in the offsite support matrix in the licensee's contingency plan had been verified and updated to ensure the continued receipt of supplies. The licensee had verified that suppliers would cross picket lines if they were to be established.

The inspectors met with representatives of Local 7-669 of the United Steel Workers, the union that represented the licensee's hourly operations and maintenance employees. The inspectors discussed the role of the NRC and its inspectors in the event of a work stoppage along with the need to ensure unfettered site access for inspectors in the event a picket line was established. The inspectors showed union representatives examples of credentials carried by inspectors and the magnetic placards that vehicles driven by inspectors would have to identify the occupants as NRC officials. The local's leadership committed to continued cooperation with the NRC if a work stoppage were to occur to ensure that NRC inspectors could continue to have access to the licensee's facility. Arrangements were made to ensure that the union leadership and members of the NRC staff could readily communicate with each other. During the course of the inspection, with very few exceptions, individuals on the picket line were cordial and professional in their interaction with NRC inspectors.

The inspectors met with representative of Illinois State Police and the Massac County Sheriffs Office to discuss the NRC's neutral position in any potential labor dispute and made contingency arrangements to ensure continued unfettered site access to the licensee's facility during any potential labor dispute. The inspectors again showed examples of credentials carried by inspectors and the magnetic placards that vehicles driven by inspectors would have to identify the occupants as NRC officials. Local law enforcement officials provided the inspectors with information and guidance to follow in the event that inspectors experienced interference or difficulty gaining access to the facility. Members of the Illinois Emergency Management Agency staff also attended the meeting and provided an intelligence assessment based on open sources that indicated that the threat level in the event of a labor dispute was nominal.

The bargaining unit contract between the union representing hourly operations and maintenance personnel and the licensee expired on June 21. Negotiations continued beyond June 21 with no agreement being reached. As a result of the failure to reach a negotiated contract settlement, the licensee elected to lock out hourly personnel during the evening of June 28. Salaried control room personnel carried out a safe shut down of the ore-prep and green salt process. Following shut down of plant production operations, the inspectors conducted walk downs of the facility with licensee representatives to verify that plant systems had been adequately secured. No issues of safety significance were identified.

(3) Conclusions

The licensee developed and implemented a strike contingency plan to ensure orderly and safe shutdown of the plant. Plant operations were safely secured after the licensee made the decision to lockout bargaining unit employees.

Off-site and labor union officials were very cooperative in providing assistance to ensure that NRC inspectors continued to have unfettered access to the licensee's facility.

b. Operator Training (88010)

Training and Qualification of Temporary Workers

(1) Inspection Scope

The inspection consisted of a review of the licensee's operator training and qualification program. The inspection consisted of a review of documentation including lesson plans, procedures, and completed qualification packages. Observations of training activities included classroom and examination sessions and evaluation of training activities performed in the field.

The inspectors observed the conduct of two emergency response drills, including the participant debriefing and the executive debriefing for different shift crews. The first drill was on July 13, 2010, and the second was on July 26, 2010.

The inspectors reviewed the drill objectives. The inspectors observed the control room activities, control point activities, activities on the plant grounds and the emergency response team muster at the cylinder wash station and use of the census card readers. The purpose of these inspections was to assess the results of the licensee's training and the integration of temporary workers into the emergency response teams. The temporary workers provided support for the entry team, recovery team, and decontamination team.

(2) Observations and Findings

License Condition 18 of NRC License No. SUB-526, stated, in part, that the licensee shall conduct authorized activities in accordance with the statements, representations and conditions in specific documents including the license application dated May 12, 2006, as supplemented by letters dated March 20, 2007, and May 12, 2008. Section 2.5.3 of the application stated that individuals who routinely monitor plant parameters and manipulate controls associated with licensed material processing are referred to as Chemical Operators and that Honeywell shall provide initial training and continuing training for Chemical Operators in accordance with established plant policies and procedures. Training procedures for chemical operators are described in Procedure MTW-ADM-TRN-0701, "CONDUCT OF TRAINING."

Section 4.4 of Procedure MTW-ADM-TRN-0701 required, in part, that strict control be maintained of written examinations, related answer keys, examination banks, Job Performance Measures (JPMs), and all other examination instruments, in part, by allowing access to examination instruments to those with a "need-to-know" basis. A note in section 4.4 stated persons with a "need-to-know" basis may include, but are not limited to, responsible management representatives, program owner, course instructor, and training material developers.

After completing on-the-job training (OJT), prospective chemical operators underwent a practical examination in the plant known as an On-the-Job Evaluation (OJE) [NOTE: in practice, the term JPM is used interchangeably with OJE]. Section 4.6 of Procedure MTW-ADM-TRN-0701 described the process and requirements for conducting OJEs. Item 4.6.8.2 stated that the OJE evaluator will ensure no coaching occurs during the evaluation.

The inspectors reviewed procedures and related documentation associated with the training and qualification program. Procedures adequately addressed the administrative aspects of the training and qualification program. Details addressing the conduct of training, remedial training requirements, and necessary measures to successfully progress through the various stages of the training and qualification program were incorporated in approved procedures. The inspectors reviewed a sampling of completed qualification packages for completeness and accuracy.

The inspectors observed oral board and OJE sessions. The OJE session required the individual to perform a system walk down utilizing a checklist while being observed by a supervisor or other individual qualified in the specific task area. The individual was required to demonstrate knowledge of the location of system components, critical monitoring instrumentation, and indicators monitoring system operability status. The

individual had to be familiar with operating parameters and knowledgeable of system checklist performance requirements. The inspector noted that individuals were required to complete the system checkout with no assistance from the evaluator. No issues of safety significance were identified.

Prior to June 21, the inspectors observed several oral board sessions for ore prep and green salt candidates. These sessions were conducted by Production Supervisors or system engineers. The inspectors noted that the boards were conducted in a consistent fashion and the sessions were comprehensive, requiring the trainee to demonstrate knowledge of system performance, purpose and function of all major system components, operating parameters and out-of-tolerance conditions. Individuals were required to demonstrate knowledge of emergency response actions to take in the event of system upset conditions or emergency situations. Areas in which the individual may not have demonstrated the expected level of knowledge were noted by the examiner. The examiner provided a list of topics, as necessary, to the trainee for follow-up study. Individuals would be afforded time to study the material before being re-examined. The inspectors noted that these sessions were conducted in accordance with approved procedures. No issues of safety significance were identified.

However, on August 5, during the preparation for restart of the fluorination and distillation processes, the inspectors observed an OJE evaluator as he conducted an OJE. The OJE began with a pre-scripted oral evaluation. The inspector identified four examples of operator candidates listening to oral questions during an OJE prior to receiving their own OJE. This constituted a compromise of exam security for the oral exam portion of the OJE. For example: 1) the inspectors observed one operator candidate at the same table with a stack of procedures during the oral evaluation, 2) the inspectors observed a different operator candidate enter the room and take a seat at the same table during the oral evaluation, and 3) the inspectors saw two other operator candidates come into the room during the evaluation, gather materials, and leave. None of these operator candidates had yet been examined.

When the oral evaluation was complete, the evaluator then tasked the candidate with starting the fluorination system as part of the OJE. While in the plant, the inspectors saw that other operator candidates observed a candidate being evaluated as he performed his OJE, thus compromising the task performance portion of the OJE. These two examples of failure to maintain strict control of OJE and other examination instruments were identified as examples of a violation of NRC License Condition No. 18. (VIO 40-3392/2010-002-01)

As the OJE progressed, the inspectors noted that the evaluator coached the candidate several times during task performance and therefore did not allow the candidate to completely demonstrate his ability to independently perform the task. For example: 1) the evaluator provided coaching when he showed the candidate the locations of several components when the candidate was unable to locate them, 2) the evaluator coached the candidate when the evaluator showed the candidate where the candidate was in the procedure and, 3) the evaluator coached the candidate when the evaluator helped the candidate follow the procedure when the candidate became confused.

The inspectors found similar behavior with other evaluator/operator candidate pairs during the conduct of their OJEs. The failures to ensure that OJE candidates were not coached were also identified as examples of a violation of NRC License Condition No. 18. (VIO 40-3392/2010-002-01)

The inspectors met with licensee management and discussed their findings. The licensee immediately agreed to take corrective actions. The licensee voided all of the OJEs that had been conducted on the fluorination and distillation operator candidates. The licensee then rewrote all of the OJE oral questions. The licensee trained the operator candidates and the evaluators on the proper method of conducting OJEs. The licensee then also posted the examination room so no one would enter during the oral examination portion of the OJE. The licensee took steps to prevent unexamined candidates from observing the task performance of the OJE by other candidates. The licensee then resumed conducting OJEs. The inspectors observed several of these sessions and found the corrective actions taken by the licensee were effective.

When the inspectors observed the renewed effort to conduct OJEs, the evaluators found that many of the components in the plant were either not labeled or had incorrect labels. The inspectors found that the nomenclature on the labels frequently did not match the procedures. The inspectors and evaluators also identified errors in the procedures. One example was a procedure that provided detailed instructions to conduct an operation at a small control panel that had been removed from the plant. The procedure did not provide detailed instructions to conduct the same operation that had been moved to the digital control system.

After debriefing the licensee management team of the new findings, the licensee again halted the OJEs and had eight teams of subject matter experts/scribes walk down every procedure with piping and instrument diagrams and correct component labels in the field. This effort took about a month. On September 1 & 2, a follow-up team of four inspectors went to the site to review OJEs on a sample of the fluorination and distillation systems operator candidates and were able to conclude the temporary workers could independently operate the fluorination and distillation systems in a safe manner.

During the observation of emergency drills, the inspectors noted that the drill participants appropriately responded to the simulated event properly using suitable safety equipment and personal protective equipment. The inspectors also observed radiation safety team members provide industrial and radiation safety support including collecting samples in support of the incident commander.

During the conduct of the drills, the inspectors observed the interaction between temporary workers and Honeywell management. Temporary workers did not hesitate to ask questions and raise safety issues. The inspectors further observed that each of the questions or safety issues were addressed immediately and to the satisfaction of everyone involved. Interviews of temporary workers during other phases of the inspection continued to indicate that plant staff was comfortable in raising safety issues to plant manager.

(3) Conclusions

The licensee had developed an adequate training and qualification program for temporary workers to support the safe operation of the ore production and green salt facilities. Training and qualification requirements were adequately addressed in approved procedures. Oral boards and job performance measures were conducted in accordance with approved procedures and addressed key knowledge elements of applicable component and system operations. The licensee had also provided adequate training to a sufficient number of emergency responders to ensure that the minimum number of emergency response personnel were available during plant operations.

However, two examples of a violation of NRC requirements were observed during the qualification process in support of the start up of the distillation and fluorination processes. Specifically, the licensee failed to adequately control access to examination materials when an evaluator allowed several operator candidates, other than the one being evaluated, to listen to the oral exam questions as well as when an evaluator allowed several other operator candidates to observe an OJE session prior to their evaluations. Further, the licensee failed to comply with training program requirements when an evaluator provided coaching for a candidate during an OJE session.

c. Operational Safety (88020)

(1) Inspection Scope

The inspection included observation of control room activities and shift turnovers, field observations, document reviews, and discussions with plant personnel.

(2) Observations and Findings

Inspectors observed shift coverage activities associated with the operation of the ore prep and green salt systems. The licensee had initially limited plant operations to these two production areas only.

The inspectors observed control room activities and operations personnel while performing routine duties. Based on discussions with ore preparation and green salt operators, the inspectors found that temporary workers were knowledgeable of their responsibilities and were adequately trained and qualified to perform their assigned duties. The inspectors observed plant personnel as they performed their shift rounds and system operational status checks. The inspectors noted that individuals were knowledgeable of the various component operational indicators and required operational ranges for various components and instruments.

The inspectors observed control room operators during the inspection period as they performed control room functions. Operators demonstrated adequate knowledge of system operational status as displayed on control room panels. Operators answered inspector questions pertaining to the operational status of systems and components and the meaning and function of various annunciators and alarms. The inspectors queried control room operators regarding the procedure to establish "safe haven" conditions in the control room in the event of a hazardous chemical or toxic release. Various actions

such as securing ventilation dampers, establishing air flow to the airline respirator manifold stations, donning of respirators, and other steps were required to establish safe haven conditions. The inspectors found that not all personnel were sufficiently knowledgeable of all applicable aspects associated with establishment of safe haven conditions in the control room. The inspectors discussed this issue with responsible personnel. The inspectors noted that the licensee conducted a refresher training session for shift personnel several hours after the concern was raised. The inspectors observed one of the refresher training sessions conducted in the control room and found that the training adequately addressed the inspectors' concerns.

The inspectors observed routine operational activities conducted in the field and the coordination of these activities with control room operators. Field activities observed by the inspectors included routine tours conducted by assistant operators, the operation of the ore feed dump station, drumming of green salt, bumping of system filters, sample collection, issuance of hot work permits, and miscellaneous minor maintenance activities. Communications between operators and assistant operators and operators and maintenance personnel were performed in a timely and effective manner. Field activities were conducted in accordance with approved procedures.

The inspectors observed personnel as they collected various process samples from the ore preparation, green salt production streams, and EPF waste storage tanks. Samples were obtained in accordance with approved procedures.

The inspectors observed control room personnel on several occasions as they restarted systems and components. Inspectors observed control room operations associated with the start-up and shut down of green salt trains and start-up of the ore prep system. The inspectors noted strict procedural compliance on the part of control room operators. Procedure steps were followed to ensure that component manipulations were performed in the correct sequence as required by operating procedures. Communications with operators in the field during these activities were adequate. No issues of safety significance were identified.

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 stated, in part, "that a public address (plant paging) system accessed by phone is used for announcing general and emergency messages." In the ERP, the public address (PA) system was interchangeably referred to as the PA system or the paging system. The ERP further stated that during an emergency, the PA/paging system was used by the licensee to:

- Activate the Emergency Response Organization including the Emergency Response Team (also known as "Red-Hats") and the Crisis Management Team;

- To inform plant personnel of emergency conditions that require employees to take protective actions such as shelter in place, partial evacuation, accountability, or total evacuation; and,
- Provide additional emergency-related information to onsite personnel such as the location of any established local control points, or the status of plant conditions.

During the inspection, three NRC inspectors walked down several interior and exterior areas throughout the licensee 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 uranium hexafluoride (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/paging 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/paging 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. The failure to maintain the PA system in a condition to ensure announcements would be heard by individuals located throughout the plant was identified as an Unresolved Item (URI) and NRC review of this issue is ongoing. (URI 40-3392/2010-002-04, Failure to Maintain PA System)

At the beginning of the night shift on September 6, 2010, the inspectors were informed that toward the end of the previous day shift, distillation personnel had observed an apparent malfunction of a pressure transmitter on the high boiler column of the UF₆ distillation system. The pressure transmitter was located on a pressure gauge tap located on the third floor of the FMB. The pressure transmitter, a redundant pressure gauge, and an isolation valve were equipped with a shared electrical heat trace to prevent the solidification of UF₆ in these components. An electrical breaker located in a nearby stairwell controlled electrical power to this and a number of other heat traces was located nearby. The electrical power circuit for the trace was not equipped with a rheostat.

Item 3.1 of Licensee Procedure MTW-SOP-FMB-0202, "HEATING A UF₆ (sic) LINE" stated, in part, that when heated, trapped UF₆ may cause hydrostatic pressure that can significantly damage piping and equipment and possibly cause employee injury; therefore, take appropriate precautions. Item 5.1 of the same procedure stated that:

“When a normally heated UF₆ line is discovered to be cold, perform the following:

- 5.1.1 Apply the STAR method (Stop, Think, Act, Review).
- 5.1.2 Consult knowledgeable personnel involved before moving to correct the issue.
- 5.1.3 Request participation by all affected personnel in formulating corrective actions before heating a UF₆ line.
- 5.1.4 Analyze why the line has become cool.”

A caution appeared adjacent to this step stating that heat is not to be applied to a UF₆ line until a reason can be determined why the line has cooled.

Items 5.1.6 and 5.17 further stated, in part, that after ensuring the line has been exposed to vacuum, heat should be applied slowly and that when necessary, cycle the heat source repeatedly (on and off) over a period of time, increasing the line temperature until operating temperature is established. Interviews with FMB supervision indicated that given the lack of a rheostat on the trace installed on the high boiler column pressure tap, this was normally accomplished by cycling the electrical power on and off.

FMB control room personnel investigating the malfunctioning pressure transmitter discovered that the heat trace was cold and apparently de-energized. The operator stated that he brought the issue to the attention of the FMB supervisor who directed him to reenergize the trace without any direction to cycle the breaker that controlled power to the trace. Trace power was apparently left on continuously and was not modulated to warm the pressure tap components gradually. Interviews also revealed that no consideration was given to ensuring the line had been exposed to a vacuum prior to restoration of power so as to ensure that sublimating UF₆ did not over-pressurize any system components.

Subsequent licensee investigation determined that the breaker that provided power to the trace on the pressure transmitter also provided power to a trace on an adjacent distillation feed tank that had been taken out of service for repairs. As part of the process of preparing that vessel for repair, licensee personnel de-energized the vessel's heat trace, which apparently unwittingly de-energized the trace on the pressure transmitter on the adjacent column. The licensee conducted an initial extent of condition and determined that this was the only breaker in the FMB that provided power to more than one heat trace.

Immediately after turnover, the night shift superintendent and the distillation assistant inspected the pressure tap and verified that the body of the isolation valve was warm. To verify that there was no UF₆ slush in the valve body, the superintendent began to operate the valve handle that resulted in the release of small quantities of UF₆ vapor. The quantity of UF₆ vapor was reported small, being described as being similar to light wisps of smoke from a cigarette. The leak was apparently limited to within the confines of the Feeds Material Building and insufficient material was released to result in an event that was reportable to the NRC.

The shift superintendent then “backseated” the valve in an unsuccessful attempt to stop the release. The superintendent then installed a vacuum hose that successfully captured the very small amount of material that continued to be released from the damaged valve. The licensee initiated the collection of air samples and activated the red lights on the third floor requiring the use of respiratory protection. Subsequent analysis found no evidence of elevated concentrations of airborne radioactive materials. Special bioassay samples collected from the superintendent and the distillation assistant found no evidence of uranium uptake.

At the time of discovery, the high boiler column contained 10,000 pounds of crude UF₆. The UF₆ was successfully isolated by being withdrawn out of the distillation system into cold traps in the fluorination system. After purging and performing a hold check to verify the removal of all UF₆ from the involved distillation system components, the isolation valve, the pressure transmitter, and the pressure gauge were replaced. Disassembly and examination of the damaged isolation valve revealed that the internal valve bellows, which was fabricated of thin foil-like metal, showed apparent physical signs of damage including wrinkling and tearing. However, examination of a number of similar valves stocked in a supply of spare valves that were thought to be ready for service indicated similar types of damage although none appeared to be as severe. It could not be conclusively determined that the internal damage in the removed isolation valve was the result of overpressurization following the restoration of electricity to the heat trace.

In response to this event, FMB supervisors briefed all shift personnel to reinforce the requirements of Procedure MTW-SOP-FMB-0202. The inspectors observed that each operator was required to review the procedure and sign a record documenting the completion of their review. The plant manager directed that a root cause investigation be performed to identify the root and contributing causes and the appropriate corrective actions.

Pending the outcome of the licensee’s root cause analysis, the multiple failures to properly implement Procedure MTW-SOP-FMB-0202, including the failure to analyze the reason the trace was cool before restoring power to the trace, the failure to ensure the line was exposed to a vacuum prior to restoration of power to prevent system overpressurization, and the failure to apply heat gradually were identified as an URI. (URI 40-3392/2010-002-05, Failure to Properly Restore UF₆ Heat Trace Power)

(3) Conclusions

Operators were generally knowledgeable of their responsibilities and the operation of systems and components that they were qualified to operate. Temporary workers were knowledgeable of their responsibilities and were adequately trained and qualified to perform their assigned duties. Except as noted elsewhere in this report, strict procedural compliance was noted on the part of operations personnel. Operators were knowledgeable of operational parameters and actions to be taken in the event that an out-of-tolerance condition was encountered. Field activities were adequately performed to maintain safe operation of the plant.

Two URIs were identified regarding the failure to maintain the PA system and the failure to properly restore UF₆ heat trace power.

3. Radiological Controls

a. Effluent Control and Environmental Protection (88045)

(1) Inspection Scope

The inspection consisted of a review of documentation, observation of environmental areas, and interviews and discussion with responsible personnel.

(2) Observations and Findings

The inspectors participated in a site tour of the environmental areas outside of the restricted area of the plant. The tour included areas identified in the Radiological Characterization Report such as mounds of old demolition debris, a capped environmental remediation area, and a fenced area of unknown hazards. The inspectors observed old demolition debris along a northeast road on the property which was characterized as contaminated in the report. The inspectors observed that the capped environmental remediation area, which had been contaminated with chemical hazards, was properly maintained. The fenced area of unknown hazards was located in a highly forested area and was only recently discovered by the licensee. The fence was either from the early operations of the plant or from the previous property owner.

The licensee evaluated the impact to the public from the surveyed areas that were located outside of the restricted area. The licensee performed dose calculations for a person located on two on-site access roads located near contaminated demolition debris, North Road and River Road, for 50 hours per year. The dose calculations were 9.9 mrem per year and 22.6 mrem per year, both below the 10 CFR 20.1301 limit of 100 mrem per year. The public was not expected to receive any dose from these areas as the licensee restricted access to these areas with gates and No Trespassing signs.

The inspectors verified that public access to the environmental areas outside of the restricted area was limited. The inspectors noted that No Trespassing signs were posted throughout the property and the access gates were in adequate condition. Through conversations with security, the inspectors determined that roving patrols of the grounds were conducted multiple times a day. Within the last year, the licensee noted evidence of trespassing in the form of a deer stand (hunting structure) which was identified by security and removed.

The inspectors observed old building debris from the Honeywell property which was located near the railroad tracks on the adjacent property. The building debris was similar in appearance to the contaminated debris located on the Honeywell property and discussed in the Radiological Characterization Report. The inspectors observed the radiological survey of the debris located on the adjacent property and verified that the material was not contaminated.

Radioactive Liquid Effluents

The inspectors observed the collection of liquid effluents from Outfall 002 and determined they were conducted in accordance with approved procedures. The inspector verified that the composite sampler used in the collection of liquid effluents had been recently calibrated. 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 one month of liquid effluent data in the logbooks and did not identify any concerns. The inspector verified that the licensee did not discharge to the municipal sewer system.

The inspectors reviewed the semi-annual effluent reports for the first and second half of 2009 and determined that the reports documented the activity released with the effluents and met the intent of 10 CFR 40.65.

Quality Control of Analytical Measurements

The inspectors noted that instrument calibration was conducted in the laboratory for the Kinetic Phosphometric Analyzer. The inspectors determined that other quality control measures such as the analysis of blank, matrix spike, laboratory control sample, or laboratory duplicate samples were not utilized in the laboratory processing of liquid or airborne effluents. The inspectors noted that no regulatory requirement existed for implementing a laboratory quality control program.

Program Implementation

The inspectors reviewed the sampling results for surface water and sediment for 2009. No adverse trends were identified.

The inspectors reviewed the 2009 sampling results for soil and vegetation and verified that the samples were collected semi-annually, analyzed for uranium, and that the sampling locations were as described by the license application. The inspectors did not identify a trend for the vegetation data or the onsite soil sampling results. The inspectors identified an increasing trend in 2009 for the offsite soil sampling results; however, the 2009 uranium in offsite soil concentrations were small and were not expected to impact public dose.

The inspectors reviewed the quarterly average airborne uranium concentrations measured by the environmental air samplers located at the fence line. The yearly average airborne uranium concentration was 1.52×10^{-14} $\mu\text{C}/\text{ml}$. The first three quarters of 2009 were below the plant investigation level of 2.0×10^{-14} $\mu\text{C}/\text{ml}$; however, the fourth quarter average was 2.28×10^{-14} $\mu\text{C}/\text{ml}$. An investigation was initiated for the fourth quarter environmental air sampler but was not completed at the time of the inspection. This issue will be tracked as IFI 40-3392/2010-002-06. The inspectors reviewed the 2009 data for the quarterly average airborne concentrations measured by the environmental air sampler located closest to the nearest residence and determined that the data was below the action limit listed in the license and was not a regulatory concern.

The inspectors reviewed the 2009 sampling results from the environmental external radiation monitoring program. The inspectors verified that the frequency and sampling locations were consistent with those required by the license. The inspectors noted that the program changed in 2009 as the first three quarters used a background control TLD located in the administrative building on site. In the fourth quarter of 2009, the licensee decided to use the environmental TLD located at the Metropolis airport as the background control value. The inspectors noted that this was a positive program change as the airport TLD was more representative of the environmental background. The licensee accidentally damaged the Metropolis airport environmental TLD in the fourth quarter 2009 and used an average of the first three controls in the analysis of the fourth quarter environmental external radiation data. No issues of significance were identified.

Procedures

The inspectors reviewed a sample of procedures pertaining to health physics (HP) and effluent control for the assessment of IFI 40-3392/2007-002-03, Licensee upgrading and formalizing the HP procedures supporting the environmental protection and the radioactive waste management programs. The licensee had completed an effort of upgrading and formalizing multiple Health Physics procedures in the 2007 and 2008 time frame. The inspectors reviewed the procedures and determined that the following procedures were adequate: MTW- ADM-HP-0106 Rev 0, Control of Liquid Effluents, MTW-SOP-HP-0104 Rev 4, Control of Gaseous Effluents, MTW-SOP-HP-0219 Rev 1, Determination of Uranium in Environmental Materials, and MTW-ADM-HP-0100 Rev 1, Radiological Protection Program.

The inspectors reviewed MTW-SOP-HP-0213, Rev 2, Kinetic Phosphometric Determination of Uranium, and observed the implementation of Section 5.3, Accountability Sample Preparation, by several different users. The inspectors determined that the procedure lacked technical data and found inconsistencies between the actions and understanding of the various procedure users. Specifically, the procedure did not include a standard curve referenced in step 5.3.3 nor did the procedure contain the acceptable range for the analytical result or data output from the Kinetic Phosphometric Analyzer (KPA). The procedure also lacked instructions for the level of initial dilution for the various samples. The inspectors observed the implementation of an operator aid, Sample Preparation Reference Sheet, by some procedure users but not by others. The inspectors did not find evidence of incorrect analytical results for the liquid or airborne effluents samples despite the inconsistent procedure and operator aid use.

IFI 40-3392/2007-002-03 was tracking the upgrading and formalizing of the Health Physics procedures over the environmental protection and radioactive waste management programs. The inspectors did not evaluate the Health Physics procedures which support the radioactive waste management programs as it was out of scope of the inspection. IFI 40-3392/2007-002-03 was reviewed, but remains open for the review of radioactive waste management procedures and pending enhancement to Procedure MTW-SOP-HP-0213.

Radioactive Airborne Effluents

The inspectors observed the collection of airborne effluent filters from the process stacks and determined the actions were in accordance with approved procedures. The inspectors reviewed the Health Physics Daily Alpha Accountability Report logbook for January 1 through June 7, 2010 and determined that the stack filter samples were collected and analyzed at the appropriate frequencies.

The licensee routinely failed to complete investigations on the process stack secondary dust collectors that exceeded administrative limits for three successive samples. Section 4.1.1 of the license application required that an investigation limit shall be established for each dust collector stack and, if the administrative limit was exceeded on three successive samples, an investigation shall be conducted to identify the source and require corrective actions. The inspectors reviewed the Health Physics Daily Alpha Accountability Report logbook for January 1 through February 28, 2009, and January 1 through June 7, 2010, and identified multiple examples in which the secondary dust collector samples were in exceedance for three successive shifts of the action limits specified in Section 4.1.1 of the license application and Form A of MTW-SOP-HP-0104, Control of Gaseous Effluents. The inspectors reviewed operation logbooks and corrective action items beginning in January 2009 and identified six occurrences in which the licensee did not have any documentation of an investigation and two occurrences in which the investigations did not meet the intent of the license application. These occurrences are displayed in Table 1 below.

In six situations between January 3, 2009, and January 16, 2010, the licensee did not demonstrate evidence of an investigation after an administrative action level was exceeded for an airborne effluent stack.

For one situation, the inspectors noted that the licensee identified a source and implemented corrective actions by replacing filter bags after a stack was identified as exceeding the action limit for 3 successive shifts. The inspectors noted, however, that the stack exceeded the investigation limit for 3 successive shifts again on February 24, 2009; seven days after the filter bags were replaced. The investigation and corrective actions did not address this failure. The inspectors determined that the investigation and corrective actions conducted by the licensee did not meet the intent of the license application.

In another situation, a stack had exceeded the action limit multiple times before it exceeded the action limit for three successive shifts on May 24, 2010, triggering the regulatory-required investigation. The inspectors reviewed documentation corresponding to this exceedance including two corrective action items (IR-10-1399 and IR-10-1504), operation logbook notes between May 17 and June 6, 2010, and HP logbooks between May 24 and June 8, 2010. The HP logbook recorded that HP contacted the operations group everyday between May 24 and June 6, 2010 to report that the stack was over the action level. On May 24, 2010, the day which initiated the regulatory-required investigation, the operation logbook referenced the elevated stack and noted that the dust collector would be re-bagged on May 27, 2010. After the work was done on May 27 and 28, the stack continued to remain elevated for days before

more actions were taken on June 3, 5, and 6. The inspectors noted the lack of a formal, documented investigation and determined that corrective actions were not implemented in a timely manner.

The failure to conduct formal investigations for process stack exceedances was initially identified by the licensee in an internal audit, AUD-2009-007/ A-53 Effluent Sampling, conducted between June 18, 2009 and July 20, 2009. A corrective action item, IR-09-2742, was opened in June 2009 to track the item and the issue was later noted by the NRC as IFI 2009-004-003. As of June 2010, the corrective action item was still open, had not yet been assigned to an investigation leader, and did not have a deadline associated with it. No corrective actions had been proposed, developed, or implemented by the licensee to address this regulatory requirement.

The uranium released in airborne effluents and the uranium measured at the environmental ambient samplers increased in 2009 compared to the previous year but was below the regulatory limit.

The inspector determined that the combination of corrective action items, operation logbook, and HP logbook entries presented by the licensee as an investigation did not fulfill the requirements of the license application as it did not clearly identify the source of the problems nor did it ensure that corrective actions were implemented to address the problems. Section 4.1.1 of the license application stated that the investigation shall be conducted to identify the source and required corrective actions. The failure to properly investigate exceedances of licensed material released from stacks was identified as a violation of License Condition No. 18 (VIO 40-3392/2010-002-02).

Table 1. Six occurrences in which the licensee failed to complete investigations on the process stack secondary dust collectors which exceeded administrative limits for three successive samples. Two occurrences in which the licensee failed to complete the investigations to the specification of the license application.

Date	Stack Number	Equipment Description	Action Limit (dpm)	Investigation
1/3/2009	#59	#6 Dry Dust Collector	5,000	None
1/14/2009	#26	Ash Vacuum Cleaner	15,000	None
2/5/09 & 2/7/09	#29	Ash Dust Collector	10,000	None
2/15/2009	#59	#6 Dry Dust Collector	5,000	None
2/15/09 & 2/17/09 & 2/24/09	#1	UF ₄ Vacuum Cleaner	5,000	Minimal
1/8/2010	#59	#6 Dry Dust Collector	5,000	None
1/16/2010	#59	#6 Dry Dust Collector	5,000	None
5/24/2010	#15	#2 Wet Oxide Dust Collector	5,000	Minimal

Public Dose Analysis

10 CFR 20.1302 (b)(2) required that licensee shall show compliance with the annual dose limit in 10 CFR 20.1301 by demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation did not exceed the annual dose limit. Reviews of dose assessment records and interviews of licensee personnel revealed that the licensee failed to show compliance with the annual dose limit in 20.1301 by demonstrating by calculation that the total effective dose equivalent (TEDE) to the individual likely to receive the highest dose from the licensed operation did not exceed the annual dose limit of 100 mrem/yr. The TEDE was comprised of the summation of 3 separate components: inhalation, ingestion, and external dose. The licensee had not completed the formal calculation and had previously characterized the inhalation (or airborne) dose portion as the total public dose. The licensee had not included the liquid effluents (ingestion) or external dose in the public dose analysis. The failure to properly determine doses to members of the public was identified as a violation of 10 CFR 20.1302 (b)(1) (VIO 40-3392/2010-002-03).

The inspectors reviewed VIO 40-3392/2009-004-02, the 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 the storm water sampling procedure, contractor Procedure CH2M HILL SOP, Outfall Sampling. The inspectors also reviewed four months of storm water effluent sampling results for outfalls 003, 004, and 005. The inspectors determined that the procedure and sampling results were adequate. However, the inspectors were not able to review the inclusion of the storm water effluent data into the public dose analysis. VIO 40-3392/2009-004-02 will remain open.

(3) Conclusions

The failure to conduct appropriate investigations and to properly perform assessments of public dose resulting from airborne effluent stack exceedances were identified as violations.

4. Follow-up on Previously Identified Issues

(Closed) IFI 40-3392/2009-004-03: Lack of completion of follow-up investigations on process stacks that were found to exceed administrative limits. The inspectors determined that the investigations on the process stacks were not completed as required by 4.1.1 of the license application. VIO 40-3392/2010-002-01 was opened to further track this issue. This item is closed.

(Discussed) VIO 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 the storm water sampling procedures and four months of storm water effluent sampling results. The

inspectors determined that the procedures and sampling results were adequate. The inspectors were not able to review the inclusion of the storm water effluent data into the public dose analysis. This item will remain open.

(Discussed) IFI 40-3392/2007-002-03: Licensee upgrading and formalizing the HP procedures supporting the environmental protection and the radioactive waste management programs. The inspectors reviewed procedures supporting the environmental protection program but did not review the radioactive waste management program procedures. This item will remain open.

5. **Exit Meeting**

The inspection scope and results were summarized on the following dates:

- June 11, 2010;
- June 18, 2010;
- June 23, 2010;
- July 1, 2010;
- July 13, 2010;
- August 25, 2010;
- September 2, 2010;
- September 9, 2010; and,
- October 1, 2010.

The inspectors asked the licensee staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

1. PERSONS CONTACTED

Partial List of Licensee's Persons Contacted

*M. Greeno, Regulatory Affairs Manager
*R. Stokes, Health Physics Manager
*T. Barnes, Nuclear Services Leader
D. Bilski, Security Manager
C. Blanden, Production Supervisor
C. Celiston, Assistant Operator-Green Salt
S. Clark, Green Salt Operator
D. Cumbelich, Human Resources Manager
D. Heine, Production Supervisor
D. Lillie, President, Local 7-669, United Steel Workers
M. Marti, System Engineer
B. Mohny, System Engineer
B. Muiter, Training
*D. Palmer, Operations Manager
*L. Parscale, Licensing
*S. Patterson, Health Physics supervisor
B. Powers, System Engineer
L. Smith, Plant Manager
F. Taylor, Operator-Green Salt
J. Taylor, Operator-Green Salt

*Denotes those present at the exit meeting.

2. INSPECTION PROCEDURES USED

IP 88010 Operator Training/Retraining
IP 88020 Operational Safety
IP 88045 Effluent Control and Environmental Protection
IP 92709 Licensee Strike Contingency Plans
IP 92711 Continued Implementation of Strike Plans During Extended Strike

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type/Description</u>
40-3392/2009-004-03	Closed	IFI - Lack of completion of follow-up investigations on process stacks that were found to exceed administrative limits. (Paragraph 3.a)

40-3392/2009-004-02	Reviewed	VIO - 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. (Paragraph 3.a)
40-3392/2007-002-03	Reviewed	IFI - Licensee upgrading and formalizing the HP procedures supporting the environmental protection and the radioactive waste management programs. (Paragraph 3.a)
40-3392/2010-002-01	Opened	VIO - Failure to safeguard training materials and failure to prevent coaching during on-the-job evaluations. (Paragraph 2.b)
40-3392/2010-002-02	Opened	VIO - Failure to complete investigations on the process stack secondary dust collectors which exceeded administrative limits for three successive samples. (Paragraph 3.a)
40-3392/2010-002-03	Opened	VIO - Failure to demonstrate the Total Effective Dose Equivalent (TEDE) for the public dose analysis. (Paragraph 3.a)
40-3392/2010-002-04	Opened	URI - Failure to maintain PA system. (Paragraph 2.c)
40-3392/2010-002-05	Opened	URI - Failure to Properly Restore UF ₆ Heat Trace Power (Paragraph 2.c)
40-3392/2010-002-06	Opened	IFI – The environmental air sampler exceeded the investigation level in the fourth quarter. (Paragraph 3.a)

4. **LIST OF DOCUMENTS REVIEWED**

Metropolis Works Contingency Plan, Rev 2

MTW-ADM-TRN-0701, Conduct of Training, Rev. 4

MTW-ADM-SEC-0002, Plant Access Authorization Program, Rev. 2

MTW-ADM-OPS-0104, Shift Turnover, Rev. 9

MTW-ADM-AD-001, Hourly Employee Overtime and Fatigue Management, Rev. 0

MTW-ADM-TNG-0007, Development and Conduct of Oral Boards, Rev. 0

MTW-OJT-GQ1-001, Green Salt Operator, Rev. 3

3

MTW-JPM-GQ2-0006, Assistant Green Salt Operator – Emergency HF Relief Valve (ERV) Tank, Rev. 0

MTW-JPM-GQ2-0004, Green Salt Maintenance Support and Abnormal/Emergency Operations, Rev. 0

MTW-JPM-GQ2-0007, Assistant Green Salt Operator Tank Farm Tasks, Rev. 0

MTW-JPM-GQ2-0008, Assistant Green Salt Operator Panel and Computer Alarm Responses, Rev. 0

MTW-LTT-GQ1-0001, Additional Training Tasks for Green Salt Operators, Rev.0

MTW-LTT-OQ1-0001, Additional Training Tasks for Ore Prep Operators, Rev.1

CP002, Module M0111CR, Train the Trainer – OJT Instruction (Lesson Plan), Rev. 0

MTW-SOP-FMB-0202, Heating a UF₆ Line

MTW- ADM-HP-0106 Rev 0, Control of Liquid Effluents

MTW-SOP-HP-0104 Rev 4, Control of Gaseous Effluents

MTW-SOP-HP-0219 Rev 1, Determination of Uranium in Environmental Materials

MTW-ADM-HP-0100 Rev 1, Radiological Protection Program.

MTW-SOP-HP-0213 Rev 2, Kinetic Phosphometric Determination of Uranium

MTW-SOP-ENV-0012, Water Sampling

CH2M HILL SOP, Outfall Sampling