



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

July 12, 2016

Mr. John Albritton
Plant Manager
Honeywell Metropolis Works
P.O. Box 430
Metropolis, IL 62960

**SUBJECT: HONEYWELL METROPOLIS WORKS – NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT 40-3392/2016-003**

Dear Mr. Albritton:

This refers to the inspections conducted from April 1 to June 30, 2016, at the Honeywell facility in Metropolis, IL. The purpose of the inspections was to determine whether activities authorized under the license were conducted safely and in accordance with Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of the inspections. The findings were discussed with members of your staff at an exit meeting held on May 5, 2016, for this integrated inspection report.

During the inspections, the NRC staff examined activities conducted under your license as they related to public health and safety and to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. Areas examined during the inspections are identified in the enclosed report. Within these areas, the inspections consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

The inspections covered the following areas; operational safety and facility support. No findings of significance were identified.

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

Should you have any questions concerning the inspections, please contact us.

Sincerely,

/RA/

Marvin D. Sykes, Chief
Projects Branch 1
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report No. 40-3392/2016-003
w/Attachment: Supplementary Information

cc: (See page 3)

Should you have any questions concerning the inspections, please contact us.

Sincerely,

/RA/

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Projects Branch 1
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report No. 40-3392/2015-005
w/Attachment: Supplementary Information

cc: (See page 3)

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U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2016-003

Licensee: Honeywell International, Inc.

Facility: Metropolis Works (MTW)

Location: Metropolis, IL 62960

Dates: April 1 to June 30, 2016

Inspectors: D. Hartland, Senior Fuel Facility Project Inspector
P. Startz, Fuel Facility Inspector

Approved by: Marvin Sykes, Chief
Projects Branch 1
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Honeywell Metropolis Works
NRC Integrated Inspection Report 40-3392/2016-003
April 1- June 30, 2016

Inspections were conducted by regional inspectors during normal shifts in the areas of safety operations, facility support, and other areas. The inspectors performed a selective examination of licensee activities that were accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

Safety Operations

- The Plant Features and Procedures (PFAPs) reviewed were properly implemented and maintained in order to perform their intended safety function. However, one unresolved item (URI) was identified regarding the licensee's further evaluation to determine if PFAPS are required for the primary cold trap rupture scenario (Paragraph A.1).

Facility Support

- The Maintenance and Surveillance of Safety Controls program was implemented in accordance with the license application and regulatory requirements. (Paragraph B.1)

Special Topics

- A previously identified URI was reviewed and is considered closed. (Paragraph C.1)

Attachment

Key Points of Contact
List of Items Opened, Closed, and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

Summary of Plant Status

The Honeywell Metropolis Works (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 this inspection period, normal conversion activities were ongoing.

A. Safety Operations

1. Operational Safety (Inspection Procedure (IP) 88020)

a. Inspection Scope and Observations

The inspectors interviewed staff and reviewed records associated with the distillation process area. The inspectors determined that the Plant Features and Procedures (PFAPs) for the distillation area were being adequately implemented and properly communicated as described in the Integrated Safety Analysis (ISA) Summary. The inspectors determined that the licensee was operating safely and in compliance with requirements.

The inspectors confirmed that the PFAPs reviewed were present and capable of performing their intended safety functions. To complete this confirmation, the inspectors verified the physical presence of active engineered safety controls, evaluated the safety controls to determine their capability and operability, and verified that potential accident scenarios were covered.

The inspectors determined that the licensee's administrative controls were implemented and communicated. The inspectors reviewed implementing procedures and determined that required actions as identified in the ISA Summary have been correctly transcribed into the procedures. The inspectors evaluated the procedures' contents with respect to operating limits and operator responses for upset conditions and verified that limits needed to assure safety were adequately described in the procedures.

The inspectors interviewed and observed operators and determined that they were adequately implementing the required safety controls and adhering to applicable safety procedures. The inspectors reviewed the licensee's corrective action program entries for the past 12 months and determined that deviations from procedures and unforeseen process changes affecting chemical, radiological, or fire safety were documented and investigated promptly. Also, the inspectors evaluated the corrective actions associated with the entries and determined that the completed corrective actions were adequate.

However, the inspectors raised an issue regarding the potential consequence to workers and/or the public regarding a postulated accident scenario involving a uranium hexafluoride (UF₆) primary cold trap rupture, after first being overfilled with solidified UF₆, and then over pressurized when the vessel was heated. The inspectors noted that the

licensee had safety controls in place to prevent such an accident (e.g., administrative fill limits, pressure vessel relief valves, relief system heating to prevent UF₆ solidification), but those controls were not designated as PFAPS.

In response, the licensee performed an evaluation that concluded that the event scenario was not credible. The licensee's basis was that the cold traps could not be filled above the inlet nozzle, at which point UF₆ would be diverted to other cold traps. Adequate void space would remain in the cold trap to prevent the vessel from over pressurizing when heated.

However, the licensee also made the assumption in its evaluation that the UF₆ in the cold trap would consist of a 50 percent low-density porous solid and not a high-density incompressible solid, resulting in a lower volume liquid when the UF₆ was heated. The licensee was unable to provide the inspectors an adequate technical basis for this assumption. The licensee's further evaluation to determine if PFAPS are required for the primary cold trap rupture scenario is an unresolved item (URI 40-3392/2016-003-01).

b. Conclusion

No violations of NRC requirements were identified.

B. Facility Support

1. Maintenance and Surveillance of Safety Controls (IP 88025)

a. Inspection Scope and Observations

The inspectors interviewed licensee management, new maintenance subcontractor management, maintenance supervisors and engineers to determine if maintenance and surveillance program activities were being conducted in accordance with procedure MTW-ADM-MT-0001, "Control of Maintenance and Modification Activities Associated with PFAP and License Related (LR-1) Equipment". Inspectors reviewed a sample of recent work orders involving PFAP/LR-1 safety related equipment to determine if work instructions met the following requirements of MTW-ADM-MT-0001 such that: functional testing adequately challenged the fundamental safety function of that control, calibration activities associated with instrumentation were adequate, discovery of functional problems were reported back to maintenance management and such issues were properly evaluated, and that corrective actions were adequate and were properly implemented.

Inspectors reviewed results of the 2015 inspections of LR-1 seismic structural modifications to determine if the work orders were in compliance with procedure MTW-ADM-MT-0001, Table 1. The 2015 inspections included the first part of an inspection program where 20 percent of all seismic structural modifications are inspected each year. The review included field conformations of the specified seismic modifications, an evaluation of whether the work order included accurate structural drawing references for the correct seismic structural elements, and field verifications of maintenance inspection findings.

The inspectors observed a six month functional test of the seismic detection system (PFAP-EQ-4) in the Feed Materials Building to evaluate whether the test was being conducted in accordance with work instruction E365272. The inspection activity also evaluated whether the test was sufficient for challenging the targeted functionality, whether the electronics technician was proficient and adequately trained to perform the work, and whether the technician performed the test in compliance with the work instruction. The inspectors reviewed the technician's training records to determine if the technician met all training requirements.

The inspectors reviewed samples of the licensee's corrective action program to evaluate whether performance issues related to the maintenance and surveillance of IROFS and LR-1 safety controls were managed in accordance with procedure MTW-ADM-REG-0110, "Corrective Action Program". The evaluations included: whether discovered issues were properly entered into the corrective action program, whether adequate evaluations were completed, and if corrective actions were properly implemented.

The inspectors evaluated whether the licensee's work control program had provisions to ensure adequate pre-job planning, scheduling, and preparation of work orders to support preventive maintenance (PM) and surveillance activities, such that these activities were conducted in accordance with their License Application, SUB-526, paragraph 2.6.2 "Conduct of Operations". The inspectors evaluated samples of maintenance and surveillance work orders to evaluate the following aspects of work activities: completeness and accuracy that ensured test packages challenged and verified operability of PFAPs and LR-1 safety controls, proper placement of lock-out/tag-outs (LOTOs) in the field prior to authorizing work activities, personnel verified that LOTO locks were placed in the field, associated LOTO documentation was complete and available, LOTO tags were placed on the correct components, work areas were properly posted with caution tape and information tags/signs while work activities were ongoing, work documents were in-hand and work was performed in accordance with work control documentation, required Personal Protective Equipment (PPE) was properly worn, completed work orders were adequately reviewed prior to returning equipment to service, scheduling and performance of routine PM's were adequate to ensure reliability and availability of PFAPs and LR-1 designated components, and personnel were knowledgeable of their responsibilities.

b. Conclusion

No violations of NRC requirements were identified.

c. Special Topics

1. Follow-up on Previously Identified Issues

- a. (Closed) URI 40-3392/2009-005-03: Multiple discrepancies identified between the ISA and ISA Summary. Of the discrepancies identified, the licensee identified two accident scenarios, UF₆ release due pigtail failure and crane failure, that had a consequence to the worker and/or public which required PFAPS to be implemented. For the pigtail failure, the licensee intended to revise the ISA Summary to incorporate PFAPS for manual isolation of the UF₆ fill manifold and product cylinder as well as one for pigtail leak testing. For the crane failure scenario, the licensee intended to incorporate PFAPS for periodic crane inspections and an emergency brake. These safety features/controls,

although not currently designated as PFAPS, were being adequately maintained by the licensee. Therefore, the inspectors determined that the failure to provide PFAPS for these accident scenarios is of minor safety significance, and no formal enforcement action is being taken. This item is considered closed.

D. Exit Meeting

The inspection scope and results were presented to members of the licensee's staff at various meetings throughout the inspection period and were summarized on May 5, 2016, to J. Albritton and staff. No dissenting comments were received from the licensee. Proprietary information was discussed but not included in the report.

SUPPLEMENTAL INFORMATION

1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
J. Fulks	Operations Manager
R. Lindburg	Health Physics Supervisor
S. Patterson	Regulatory Affairs manager
J. Price	Technical Manager
J. Albritton	Plant Manager

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

40-3392/2016-003-01	URI	Licensee's Further Evaluation to Determine if PFAPS are Required for the Primary Cold Trap Rupture Scenario
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Closed

40-3392/2009-005-03	URI	Multiple discrepancies identified between the ISA and ISA Summary
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3. INSPECTION PROCEDURES USED

88020	Operational Safety
88025	Maintenance and Surveillance of Safety Controls

4. DOCUMENTS REVIEWED

Records:

MTW-CALC-F2N-0068, Consequence of Primary Cold Trap Full of Frozen UF₆ Placed on Heat, Revision (Rev.) 0

Procedures:

MTW-ADM-OPS-0121, Management of Plan Features and Procedures, Rev. 16
MTW-ADM-QA-0160, Performance of Internal Audits, Self-assessments, and Inspections, Rev. 4
MTW-ADM-MT-0001, Control of Maintenance and Modification Activities Associated with PFAP Related Equipment (LR-1), Rev. 2
MTW-ADM-REG-0110, Corrective Action Program, Rev. 4

Other Documents:

Application for Renewal of USNRC Source Material License, SUB-526, Rev., dated September 18, 2015
MTW Integrated Safety Analysis Summary, Rev. 10, dated August 27, 2015
MTW Safety Demonstration Report, Rev. 25, dated September 18, 2015
MTW Safety Basis and Corrective Action Plan, Response to NRC Confirmatory Order EA-12-157, Rev. 3, dated May 22, 2013

PFD MTW-B4652, Primary Cold Trap, Rev. B
Memorandum from C.E. Hilderbrand to W.D. Daley, "Status- Cold Trap Process Design Job
No. 30214", dated March 17, 1970