



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

October 28, 2019

Mr. Jeff Fulks  
Plant Manager  
Honeywell Metropolis Works  
P.O. Box 430  
Metropolis, IL 62960

SUBJECT: HONEYWELL METROPOLIS WORKS – NUCLEAR REGULATORY COMMISSION  
INTEGRATED INSPECTION REPORT 40-3392/2019-004

Dear Mr. Fulks:

This letter refers to the inspections conducted from July 1 to September 30, 2019, at the Honeywell Metropolis Works 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 U.S. Nuclear Regulatory Commission (NRC) requirements. The enclosed inspection report presents the results of this inspection.

During the inspections, the Nuclear Regulatory Commission (NRC) staff examined activities conducted under your license, as related to public health and safety and to confirm compliance with the Commission's rules and regulations and with the conditions of your license. The inspections covered the following areas: radiological controls and facility support. Within these areas, the inspections consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of these inspections, no violations of more than minor significance were identified.

In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390 of the NRC's "Agency 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 Agencywide Documents Access and Management 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 me at (404) 997-4555.

Sincerely,

**/RA/**

Eric Michel, Chief  
Projects Branch 2  
Division of Fuel Facility Inspection

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

Enclosure:  
NRC Inspection Report No. 40-3392/2019-004  
w/Attachment: Supplemental Information

cc: (See page 3)

cc:

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INTEGRATED INSPECTION REPORT 40-3392/2019-004

**DISTRIBUTION:**

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T. Vukovinsky, RII

P. Startz, RII

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ADAMS: ☒ Yes      ACCESSION NUMBER: **ML19301A006**      ☒ SUNSI REVIEW COMPLETE      ☒ FORM 665 ATTACHED

OFFICE	RII/DFFI	RII/DFFI	RII/DFFI		
NAME	PStartz	DEdwards	EMichel		
DATE	10/19/2019	10/21/2019	10/25/2019		

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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION II**

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2019-004

Enterprise Identifier: I-2019-004-0014

Licensee: Honeywell International, Inc.

Facility: Metropolis Works

Location: Metropolis, IL 62960

Inspection Dates: July 1 to September 30, 2019

Inspectors: P. Startz, Fuel Facility Inspector (Section A.1 and B.1)  
D. Edwards, Fuel Facility Inspector (Section A.2 and B.1)

Approved by: E. Michel, Chief  
Projects Branch 2  
Division of Fuel Facility Inspection

Enclosure

## **EXECUTIVE SUMMARY**

### **Honeywell Metropolis Works Nuclear Regulatory Commission Integrated Inspection Report 40-3392/2019-004 July 1 – September 30, 2019**

Regional Inspectors from the U.S. Nuclear Regulatory Commission (NRC) conducted inspections during normal shifts in the areas of radiological controls and facility support. The inspectors reviewed licensee activities through direct observation of selected safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and review of facility records.

#### **Radiological Controls**

- In the area of Radiation Protection, no violations of more than minor significance were identified. (Section A.1)
- In the area of Environmental Protection, no violations of more than minor significance were identified. (Section A.2)

#### **Facility Support**

- In the area of Radiological Transportation, no violations of more than minor significance were identified. (Section B.1)

#### **Attachment**

Key Points of Contact  
List of Report Items  
Inspection Procedures Used  
Documents Reviewed

## **REPORT DETAILS**

### **Summary of Plant Status**

The Honeywell 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 into uranium hexafluoride (UF<sub>6</sub>). During this inspection period all uranium conversion processing remained shut down, referred to as ready-idle status. The only significant NRC-licensed uranium operations conducted included the receipt, sampling, storage, and shipment of uranium ore; and radiological support staff operations.

#### **A. RADIOLOGICAL CONTROLS**

##### **1. Radiation Protection (Inspection Procedure 88030, Appendix B)**

###### **a. Inspection Scope**

The inspectors evaluated selected aspects of the licensee's Radiation Protection program to verify compliance with selected portions of 10 CFR 20, the facility's license, and applicable procedures.

The inspectors reviewed significant revisions to MTW-ADM-HP-0100, "Radiological Protection Program," and samples of other licensee procedures listed in Section 4 of the attachment, and interviewed the licensee's health physics (HP) manager and other cognizant staff to determine if the licensee monitored employees for occupational radiation exposure in accordance with Title 10 of the Code of Federal Regulation (10 CFR) 20.1202(a). The inspectors focused on evaluating the changes to the radiation protection program as a result of the temporary suspension of uranium hexafluoride production at the site..

The inspectors reviewed the licensee's procedures for evaluating routine radiation protection functions including contamination surveys, radiation surveys, responses to exceedance of action levels, laboratory analysis activities, radiation work permits, radiological instrumentation availability and calibration, and changes in data management and data storage protocols. The inspectors reviewed the licensee's dosimetry contractor (Landauer Inc.-NVLAP Lab Code 100518-0) to verify that the contractor's program was accredited in 2019 by National Voluntary Laboratory Accreditation Program (NVLAP) in accordance with 10 CFR 20.1501(c).

The inspectors reviewed the methodology and programmatic assumptions made by the licensee in the calculation of dose to verify that the licensee calculated the dose to workers using conservative assumptions in accordance with MTW-MAN-HP-0001, "Internal Dosimetry Technical Basis Manual." The inspectors reviewed samples of the Bioassay Sampling and Radiological Protection Program procedures, documentation of dose calculations, and equipment and processes used to evaluate internal exposures to determine if the internal dose results were derived in accordance with 10 CFR 20.1204, and that internal dose was monitored in accordance with 10 CFR 20.1502.

The inspectors reviewed bioassay procedure MTW-ADM-HP-0101, "Bioassay Sampling" and related activities including the oversight of laboratory analysis of bioassay samples, calculations of bioassay results, samples of dose calculations, and licensee investigations required as a result of a high analysis result. The inspectors also interviewed HP staff to determine if the bioassay program was in compliance with Section 3.2.5.3 of the License Application for routine and special samples, for establishing bioassay action levels, for determining internal exposure from the bioassay results, and for investigating results above the investigation level.

The inspectors reviewed procedures associated with the respiratory protection program to evaluate the current operational status and compliance with MTW-ADM-HP-0113, "Respiratory Protection Program." The inspectors also interviewed licensee staff to determine if the licensee continued to maintain all respiratory protection programmatic elements in accordance with licensee procedures and 10 CFR 20.1703.

The inspectors interviewed licensee personnel and reviewed the latest meeting minutes from the "as low as reasonably achievable" (ALARA) committee to verify that the licensee used, to the extent practical, engineering controls to achieve occupational doses ALARA in accordance with 10 CFR 20.1101(b), as well as using process or engineering controls to control the concentration of airborne radioactive material in accordance with 10 CFR 20.1701. The inspectors evaluated samples of the licensee's radiological postings in and around uranium ore drum storage areas, uranium processing buildings (operational and ready-idle), and uranium container labels to evaluate compliance with 10 CFR 20.1902, 20.1903, 20.1904, and 20.1905.

The inspectors reviewed the latest Semiannual Health Physics ALARA Report for 2019 to determine if the ALARA program was in compliance with 10 CFR 20.1101(b) and the license requirements. The inspectors reviewed ALARA Committee meeting minutes from the previous two meetings to determine whether the ALARA program monitored, trended, and where practical, addressed adverse exposure trends. The inspectors interviewed the licensee HP manager concerning implementation of the program and the ALARA goals to determine whether the licensee was meeting the license commitment to ALARA. The inspectors reviewed meeting minutes to determine whether the ALARA Committee was reviewing facility operations in order to control radiation exposure in accordance with the License Application, Sections 2.3.2 and 3.1.1. The inspectors reviewed procedures and interviewed licensee staff to verify that the radiation protection staff had authority to implement ALARA policies and that workers had been adequately trained to understand the ALARA philosophy and how to implement it in accordance with the license requirements.

The inspectors walked down storage areas containing drums of natural uranium ore and process intermediates, and other product storage areas containing uranium hexafluoride cylinders. The inspectors also conducted perimeter walk-downs around the facility boundary and determined that all uranium processing buildings and uranium storage areas were located within security fencing, and that there were controlled entry/exit portals for vehicles and personnel. The perimeter walk-downs were performed to determine if licensed materials were all located in secure controlled areas that would prevent unauthorized removal or access as required by 10 CFR 20.1801 and 20.1802.



The inspectors interviewed staff, reviewed procedures including MTW-SOP-HP-0201, "Determination of Airborne Radioactivity," and observed air samplers in the ore sampling building to verify that the air sampling program complied with license requirements for airborne concentration surveys, number, and use of air samplers to support the respirator-use warning lights. The inspectors also reviewed a sample of radiation/contamination survey results for compliance with 10 CFR 20.1501, 20.1502, and 20.1503. The inspectors walked through and confirmed all other uranium production areas at the site remained in a "ready-idle" status.

The inspectors reviewed the dose to workers, recorded in NRC Form 5 Equivalent, "Occupational Exposure Report for a Monitoring Period" and supporting documentation, to verify that the dose results include the total effective dose equivalent, the lens dose equivalent, the shallow dose equivalent, and did not exceed the limits in 10 CFR 20.1201, 20.1207, and 20.1208. The inspectors reviewed licensee dose calculations for workers both to determine if assumptions used in the calculations were conservative and met the regulations, and to determine that intake of uranium did not exceed the limits of 10 CFR 20.1201(e).

The inspectors reviewed a sample of incident reports and interviewed staff and management to determine whether the licensee implemented a program to evaluate safety-significant events in the area of radiation protection that met the requirements of the License Application, Sections 2.8 and 3.2.5.3. The inspectors reviewed selected events related to the radiation protection program to verify that the licensee identified corrective actions to correct problems and prioritized resolution of problems commensurate with their safety significance.

b. Conclusion

No violations of more than minor significance were identified.

2. Effluent Control and Environmental Protection (Inspection Procedure 88045)

a. Inspection Scope

The inspectors evaluated the licensee's environmental protection program to determine compliance with applicable Nuclear Regulatory Commission regulations including 10 CFR Parts 20, 40 and 70; and compliance with Section 4 of the License Application and the Safety Determination Report (SDR) referenced in Materials License SUB-526. The inspectors also evaluated changes to the environmental protection staffing and programmatic functions within the past year to evaluate compliance with requirements described in Chapter 9 of the license application.

The inspectors performed walk-downs of recently installed equipment designed to purify water from surface retention lagoons as needed. The inspectors observed automated composite sampling equipment and verified that sample collection activities were ongoing and capable of sampling all discharge streams being released to the Ohio River. All observed sampling activities were evaluated to verify compliance with procedure MTW-ADM-HP-0106 "Control of Liquid Effluent". The inspectors reviewed the latest available six-month summaries of uranium analytical data for 2019 and evaluated whether the monthly and annual data indicated compliance with the limits described in 10 CFR 20, Appendix B.

Samples of various environmental operating procedures, onsite laboratory analysis results, and sampling equipment calibration compliance records were evaluated. The inspectors evaluated whether the activities had been conducted in accordance with the applicable procedures, at the required frequency, and were in compliance with Section 4.1, "Effluent Control System," of the License Application.

The inspectors reviewed property fence line dosimeter results for portions of calendar years 2018 and 2019 that were used, in part, to calculate the public dose. The inspectors evaluated samples of radiological airborne effluent-specific public dose calculations used to determine if the public dose results remained less than the ALARA constraint on air emissions as required in 10 CFR 20.1101(d). The inspectors assessed whether the annual public dose associated with all licensed activities remained less than 100 mrem/year as required by 10 CFR 20.1301. The inspectors reviewed the biannual effluent reports for 2018 to determine if the licensee was in compliance with the radiological limits specified on Title 10 of the Code of Federal Regulations (10 CFR) 70.59 and 10 CFR 20, Appendix B, Table 2. The inspectors also reviewed radiological records to verify that the licensee was complying with the record retention requirements in 10 CFR 20.2107.

The inspectors reviewed samples of environmental monitoring locations for soil, surface water, ambient air, and external radiation immediately around the facility, including the Ohio River, to determine compliance with Section 4 of the License Application. The inspectors assessed whether the locations and physical characteristics of the sampling locations were appropriate, would provide satisfactory data, and the equipment was maintained in a fully functional state in accordance with MTW-SOP-HP-0209 "Collecting Environmental Samples" and Section 5 of the Safety Determination Report for SUB-526.

b. Conclusion

No violations of more than minor significance were identified.

B. FACILITY SUPPORT

1. Inspection of Transportation Activities (Inspection Procedure 86740)

a. Inspection Scope

The inspectors evaluated whether the licensee had established and maintained an effective management-controlled program to determine whether radioactive material transportation activities were in compliance with the applicable Nuclear Regulatory Commission regulations including 10 CFR Parts 20 and 71; and Department of Transportation regulations 49 CFR Parts 171-178. Licensee activities reviewed included the receipt, packaging, delivery to a carrier, and private carriage of licensed radioactive materials. Specifically, the inspectors reviewed samples of uranium ore shipping and receipt records. The inspectors also evaluated the preparation of shipping packages containing calcium fluoride waste material and their associated records in preparation for shipping. The records were reviewed to determine if the required information on the packages were in place and if the associated shipping orders included information such as the transportation index, package activity, including packaging labeling and placards

The inspectors reviewed a sample of incident reports and interviewed staff and management to determine whether the licensee maintained a program to evaluate safety-significant events, in the area of radiological shipping, met the requirements of the License Application, Sections 2.8 and 3.2.5.3.

b. Conclusion

No violations of more than minor significance were identified.

C. 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 August 27, 2019 to Mr. Jeff Fulks, Plant Manager, and other staff members. Proprietary information was discussed but not included in the report.

## **SUPPLEMENTAL INFORMATION**

### **1. KEY POINTS OF CONTACT**

<u>Name</u>	<u>Title</u>
J. Benard	Radiological Transportation Specialist
C. Metzger	Health Physics Specialist
R. Lindberg	Health Physics Supervisor
S. Patterson	Regulatory Affairs and ESH Manager
J. Fulks	Plant Manager
E. Robinson	Operations Manager/Technical Area Lead
R. Sanders	Senior Quality Engineer
J. Taylor	Training Lead

### **2. LIST OF REPORT ITEMS**

None

### **3. INSPECTION PROCEDURES USED**

88030	Radiation Protection, Appendix B
88045	Effluent Control and Environmental Protection
86740	Inspection of Transportation Activities

### **4. DOCUMENTS REVIEWED**

#### Procedures:

MTW-ADM-HP-0100, Radiological Protection Program, Revision 22  
MTW-ADM-HP-0101, Bioassay Sampling, Revision 3  
MTW-ADM-HP-0106, Control of Liquid Effluent, Revision 5  
MTW-ADM-HP-0113, Respiratory Protection Program, Revision 13  
MTW-ADM-HP-0118, External Radiation Exposure Control, Revision 4  
MTW-ADM-QA-0100, uranium hexafluoride (UF<sub>6</sub>) Quality Assurance Program, Revision 6  
MTW-ADM-QA-0160, Performance of Internal Audits, Self-Assessments, and Inspections, Revision 6  
MTW-SOP-HP-0104, Control of Gaseous Effluents, Revision 14  
MTW-SOP-HP-0201, Determination of Airborne Radioactivity, Revision 10  
MTW-SOP-HP-0207, Calibration of Flowmeters, Revision 8  
MTW-SOP-HP-0209, Collecting Environmental Samples, Revision 9  
MTW-SOP-HP-0216, Respiratory Protection Training and Fit Testing, Revision 13  
MTW-SOS-HP-0007, CAP 88-PC Program, Revision 1  
MTW-ADM-REG-0110, Corrective Action Program, Revision 6  
MTW-FRM-UF<sub>6</sub>C-0217A, "Approved Shipping System List For Shipment on Trailers  
MTW-SOP-HP-0104, Control of Gaseous Effluents, Revision 13  
MTW-SOS-HP-0008, Compliance with Public Radiation Exposure Limits, Revision 0  
MTW-SOP-HP-0207, Calibration of Flowmeters, Revision 6  
MTW-SOP-SMP-0214, Inspecting, Loading, and Unloading Uranium Ore Concentrates, Revision 7  
MTW-SOP-UF<sub>6</sub>C-0217, UF<sub>6</sub> Cylinder Shipping and Receiving Inspection, Revision 15

Condition Reports Reviewed:

IR-19-0169, IR-19-0163, IR-19-0067, IR-19-0164, IR-19-0089, IR-19-0122,

Records:

2018 Quarter 3 ALARA Committee Meeting Minutes, September 20, 2018  
2018 Quarter 3 ALARA Committee Meeting Presentation, September 2018  
2018 Quarter 4 ALARA Committee Meeting Minutes, December 19, 2018  
2018 Quarter 4 ALARA Committee Meeting Presentation, December 2018  
2018 Review of the Radiation Protection Program Content and Implementation, dated March 5, 2019  
Honeywell Metropolis Works Facility Effluent Report, January 1, 2018 through June 30, 2018, dated August 30, 2018  
Honeywell Metropolis Works Facility Effluent Report, July 1, 2018 through December 31, 2018, dated February 28, 2019  
2019 Quarter 1 ALARA Committee Meeting Minutes, March 22, 2019  
2019 Quarter 1 ALARA Committee Meeting Presentation, March 2019  
2019 Quarter 2 ALARA Committee Meeting Minutes, June 21, 2019  
2019 Quarter 2 ALARA Committee Meeting Presentation, June 2019  
AUD-2018-0001, A-37 ALARA Policy & A-30 Safety Review Committees, approved November 20, 2018  
NVLAP Lab Code: 100518-0, Landauer Inc., January 1, 2019 – December 31, 2019  
AUD-2018-0004, Respiratory Protection Audit, approved December 20, 2018  
Straight Bill of Lading for the shipping and receiving of UF6 cylinders  
Clean Air Act Assessment Package, Synopsis Report from CAP88-PC, Version 4.0, for the year 2018  
NVLAP Lab Code: 100518-0, Landauer Inc., January 1, 2019 – December 31, 2019  
Monthly 002 Main Effluent Report, July 2019, Radiological Results  
Second Quarter 2019 RCRA Ponds Groundwater Monitoring Review and Annual Groundwater Flow Evaluation/Second Quarter 2019 Landfill Groundwater Monitoring Review, Reference RCRA Part B Permit No. B-65R2