



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

October 16, 2018

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 40-3392/2018-004**

Dear Mr. Fulks:

This letter refers to the inspections conducted from July 1 to September 30, 2018, at the Honeywell Metropolis Works facility in Metropolis, IL. The purpose of the inspections was to determine whether activities authorized under the facility's license were conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The enclosed report presents the results of the inspections. The findings were discussed with you and members of your staff at an exit meeting held on August 30, 2018, 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, to confirm compliance with the Commission's rules and regulations and with the conditions of your license. The inspections covered the area of radiological controls. Within this area, the inspections consisted of examination of selected procedures and representative records, observations of activities, and interviews with personnel. There were no violations of more than minor significance.

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) 997-4703.

Sincerely,

/RA/

Omar R. López-Santiago, Chief
Projects Branch 1
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report No. 40-3392/2018-004
w/Attachment: Supplemental Information

cc: (See page 3)

cc:

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SUBJECT: HONEYWELL METROPOLIS WORKS – NUCLEAR REGULATORY COMMISSION
 INTEGRATED INSPECTION REPORT 40-3392/2018-004

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 ADAMS: Yes ACCESSION NUMBER: ML18289A548 SUNSI REVIEW COMPLETE FORM 665 ATTACHED

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SIGNATURE	/RA/	/RA/	/RA/	/RA/			
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DATE	10/16/18	10/16/18	10/16/18	10/16/18			
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**U.S. NUCLEAR REGULATORY COMMISSION
REGION II**

Docket No.: 40-3392

License No.: SUB-526

Report No.: 40-3392/2018-004

Licensee: Honeywell International, Inc.

Facility: Metropolis Works

Location: Metropolis, IL 62960

Inspection Dates: July 1 to September 30, 2018

Inspectors: P. Startz, Fuel Facility Inspector (Section A.1)
L. Pitts, Senior Fuel Facility Inspector (Section A.2)

Approved by: O. López-Santiago, Chief
Projects Branch 1
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Honeywell Metropolis Works Nuclear Regulatory Commission Integrated Inspection Report 40-3392/2018-004 July 1 – September 30, 2018

Regional Inspectors from the U.S. Nuclear Regulatory Commission (NRC) conducted inspections during normal shifts in the area of radiological controls. 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

- The inspectors reviewed a sample of activities in the area of radiation protection to verify compliance with the conditions of the license and regulatory requirements. No violations of more than minor significance were identified. (Section A.1)
- The inspectors reviewed a sample of activities in the effluent control and environmental protection area to verify compliance with conditions of the license and regulatory requirements. No violations of more than minor significance were identified. (Section A.2)

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 to uranium hexafluoride (UF₆). The uranium conversion process occurs in the Feed Materials Building (FMB). During this inspection period, the facility was shutdown and maintained in “ready-idle” status as described in a letter from Honeywell to the NRC, dated January 11, 2018 (ADAMS Accession Number ML18023A384).

A. RADIOLOGICAL CONTROLS

1. Radiation Protection (Inspection Procedure 88030, Appendix B)
 - a. Inspection Scope

The inspectors reviewed significant revisions to MTW-ADM-HP-0100, “Radiological Protection Program,” and 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 UF₆ production at the site. The inspectors evaluated programmatic elements including HP staffing, work area monitoring activities, radiation protection procedures, procedure approval processes, HP organizational characteristics and functions, and HP laboratory functions. 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 2018 by National Voluntary Laboratory Accreditation Program (NVLAP) in accordance with 10 CFR 20.1501(c) for the type of dosimetry being used; dosimeters 09001 – 09008.

The inspectors reviewed the methodology and programmatic assumptions made by the licensee in the calculation of dose to verify that the licensee correctly 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 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 only significant operational areas with potential airborne uranium were the ore sampling plant, uranium ore storage areas, and laboratories. 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 2018 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 have authority to implement ALARA policies and that workers have been adequately trained to understand the ALARA philosophy and how to implement it in accordance with the license requirements.

The inspectors walked down both the storage areas containing drums of natural uranium ore and process intermediates, and other product storage areas containing UF₆ 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 only functional uranium processing areas at the facility were observed to be the ore sampling plant and the laboratory where chemical and radiological analysis were being conducted. The inspectors walked through and confirmed all other uranium production areas at the site remained in a “ready-idle” status.

The inspectors completed field observations and 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 interviewed and observed a sample of licensee staff to determine if the licensee continued to maintain all respiratory protection programmatic elements, including medical exams, fit testing, training, respirator cleaning/refurbishment, and functional testing, in accordance with licensee procedures and 10 CFR 20.1703. The inspectors reviewed licensee procedures and observed and interviewed licensee staff to verify that the respirators being used were certified by the National Institute for Occupational Safety and Health for the hazard in accordance with 10 CFR 20.1703(a).

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 event 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 reviewed samples of environmental programmatic changes, procedures, and operations that had been revised since the last NRC inspection to evaluate if the environmental program and associated procedures remained in compliance with Section 4 of the License Application and the Safety Determination Report referenced in Materials License SUB-526, Amendment 11. The inspectors assessed if the facility process exhaust stacks were continuously sampled to measure the uranium emissions rate, if the stack filters were changed-out, and if filter analyses were in compliance with paragraph 4.1.1 of the License Application.

The inspectors performed walk-downs of equipment involved in the final treatment system of liquid waste discharges to the Ohio River to verify that the operating condition of the system was consistent with the plant configuration changes made to support ready-idle status. The inspectors observed automated composite sampling equipment and verified that manual sample collection activities of the sanitary and Ohio River discharge outfall were conducted as required by procedure MTW-ADM-HP-0106. The

review included an analysis of calibration records to verify that sampling equipment was maintained in an accurate and functional state. The inspectors reviewed the latest available six-month summaries of uranium analytical data results (from January to December 2017) and evaluated whether the monthly and annual data indicated compliance with the limits described in 10 CFR 20, Appendix B.

The inspectors observed a radiological technician change out stack sample filters on gaseous effluent exhaust stacks to evaluate compliance with facility procedures MTW-SOP-HP-0201, Revision (Rev.) 10 and MTW-SOP-HP-0209, Rev. 9. Samples of various environmental operating procedures, onsite and offsite laboratory analysis results, data transfer and record keeping, 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 calendar year 2017 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 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, Rev. 9; and Section 5 of the Safety Determination Report for SUB-526.

b. Conclusion

No violations of more than minor significance were identified.

B. 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 30, 2018 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>
R. Burgess	Health Physics Technician
S. Chisek	Senior Principal Environmental Engineer
J. Fulks	Plant Manager
R. Lindberg	Health Physics Supervisor
C. Metzger	Health Physics Specialist

2. LIST OF REPORT ITEMS

None

3. INSPECTION PROCEDURES USED

88030 Radiation Protection, Appendix B
88045 Effluent Control and Environmental Protection

4. DOCUMENTS REVIEWED

Records:

Attachment 10, Comply Results, Comply version v1.6, dated February 21, 2018 [for the year 2017], Report on Compliance with The Clean Air Act Limits for Radionuclide Emissions from the Comply Code – v1.6

AUD-2017-0001, A-37 ALARA Policy & A-30 Safety Review Committees, dated March 6, 2017

AUD-2017-0003, A-50 Respiratory Protection, dated July 7, 2017

Clean Air Act Assessment Package, Synopsis Report from CAP88-PC, Version 4.0, for the year 2017

Confined Space Entry Permit 32141, dated March 23, 2018

Dose Sensitivity Study ODOC-HP-0001, Liquid Effluent

Honeywell Metropolis Works Annual Effluent Report dated February 27, 2018

Honeywell Metropolis Works Semiannual Health Physics ALARA Report, dated June 6, 2018

Hydro-Kinetics Corporation letter certifying calibration of level and flow for S/N 215B01978 (Pond#4), S/N 215B01975 (Outfall 002), & S/N 217J02695 (WWTOP).

NRC Form 5 Equivalent, Occupational Exposure Report for a Monitoring Period

NVLAP Lab Code: 100518-0, Landauer Inc., January 1, 2018 – December 31, 2018

Procedure Use Determination for MTW-SOP-DIS-0701, Rev. 8, (as required by MTW-FRM-PRO-0103B)

Procedures:

MTW-ADM-HP-0100, Radiological Protection Program, Rev. 22, dated April, 6, 2018
MTW-ADM-HP-0101, Bioassay Sampling, Rev. 3
MTW-ADM-HP-0106, Control of Liquid Effluent, Rev. 5, dated April, 5, 2018
MTW-ADM-HP-0113, Respiratory Protection Program, Rev. 13
MTW-ADM-HP-0118, External Radiation Exposure Control, Rev. 4
MTW-ADM-QA-0100, UF6 Quality Assurance Program, Rev. 6
MTW-ADM-QA-0160, Performance of Internal Audits, Self-Assessments, and Inspections,
Rev. 6
MTW-ADM-REG-0110, Corrective Action Program, Rev. 7
MTW-ADM-REG-0120, Management of Change, Rev. 5
MTW-ADM-REG-0121, Management of Plant Features and Procedures, Rev. 22
MTW-MAN-HP-0001, Internal Dosimetry Technical Basis Manuel, Rev. 1
MTW-SOP-HP-0104, Control of Gaseous Effluents, Rev. 14, dated October, 6, 2017
MTW-SOP-HP-0201, Determination of Airborne Radioactivity, Rev. 10, dated April, 3, 2018
MTW-SOP-HP-0207, Calibration of Flowmeters, Rev. 8, dated December, 20, 2017
MTW-SOP-HP-0209, Collecting Environmental Samples, Rev. 9, dated March, 15, 2017
MTW-SOP-HP-0216, Respiratory Protection Training and Fit Testing, Rev. 13
MTW-SOP-HP-0240, Radiological Contamination Control For On-Site Treatment and Off-
Site Treatment of Injuries and Other Medical Issues, Rev. 9
MTW-SOS-HP-0007, CAP 88-PC Program, Rev. 1