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

January 26, 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 40-3392/2017-005

Dear Mr. Fulks:

This letter refers to the inspections conducted from October 1 to December 31, 2017, 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 members of your staff at an exit meeting held on November 30, 2017, 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 areas of radiological controls and facility support. Within these areas, the inspections consisted of examination of selected procedures and representative records, observations of activities, and interviews with personnel. 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 "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. 40-3392/2017-005
w/Attachment: Supplemental Information

cc: (See page 3)

cc:
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Scott Deming, Director
Massac County Emergency Management Agency
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SUBJECT: HONEYWELL METROPOLIS WORKS – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 40-3392/2017-005

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U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.:	40-3392
License No.:	SUB-526
Report No.:	40-3392/2017-005
Licensee:	Honeywell International, Inc.
Facility:	Metropolis Works
Location:	Metropolis, IL 62960
Inspection Dates:	October 1 to December 31, 2017
Inspectors:	T. Sippel, Fuel Facility Inspector (Section A.1) P. Startz, Fuel Facility Inspector (Section B.1)
Approved by:	O. López-Santiago, Chief Projects Branch 1 Division of Fuel Facility Inspection

Enclosure

Honeywell Metropolis Works
NRC Integrated Inspection Report 40-3392/2017-005
October 1 to December 31, 2017

The U.S. Nuclear Regulatory Commission (NRC) regional inspectors conducted inspections during normal shifts in the areas of radiological controls and facility support. 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.

Radiological Controls

The inspectors reviewed a sample of activities in the Radiation Protection program to verify compliance with conditions of the license and regulatory requirements. No violations of more than minor significance were identified. (Section A.1)

Facility Support

The inspectors reviewed a sample of activities related to the implementation of the Permanent Plant Modifications program to verify compliance with conditions of the license and regulatory requirements. No violations of more than minor significance were identified. (Section B.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 (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 (UF_6). The uranium conversion process occurs in the Feed Materials Building (FMB). During this inspection period, the facility was shutdown for scheduled maintenance activities.

A. RADIOLOGICAL CONTROLS

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

a. Inspection Scope

The inspectors reviewed procedure MTW-ADM-HP-0100, Radiological Protection Program, and other licensee procedures listed in Section 4 of the attachment to this report and interviewed the licensee's Health Physics (HP) Manager and other cognizant staff to verify that the licensee monitored employees for occupational exposure to radiation who were likely to receive, in one year, a dose of one tenth of the Title 10 of the Code of Federal Regulation (10 CFR) 20.1202(a) levels, or who enter high or very high radiation areas; which is in accordance with the requirements of 10 CFR 20.1502(a). The inspectors reviewed the dosimetry type, the exchange period, and the licensee's procedures for evaluating and using personnel monitoring data to control and minimize exposures to determine whether these aspects were appropriate to account for occupational radiation doses to personnel resulting from exposures to licensed material. The inspectors reviewed accreditation certificates to determine whether the personnel dosimeter processor maintains an accreditation from National Voluntary Laboratory Accreditation Program in accordance with 10 CFR 20.1501(c), for the type of dosimetry being tested. The inspectors observed licensee staff to verify that they were properly wearing dosimetry.

The inspectors toured work and storage areas in the controlled area to verify that the licensee posted the areas in accordance with 10 CFR 20.1902 and 20.1903, and that radiological signs and postings accurately reflected radiological conditions within the posted area. The inspectors walked down ore drum, spar drum, and UF_6 cylinder storage areas to verify that these containers were in good condition and able to safely store the material they contained. The inspectors interviewed licensee managers and staff to verify that the licensee monitors and maintains these containers in a safe state; this included discussion of licensee activities to detect leaking drums, move degraded drums into covered storage locations, repackage drums or put them in overpacks, and to clean and recertify UF_6 cylinders.

The inspectors reviewed the bioassay procedure (MTW-ADM-HP-0101, Bioassay Sampling), recent bioassay results including special samples, the results of dose calculations, and licensee investigations into high samples and interviewed HP staff to verify that the bioassay program was in compliance with license requirements in Section 3.2.5.3 of the License Application for routine and special samples, establishing bioassay action levels, determining internal exposure from the bioassay results, and investigating results above the investigation level.

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. The inspectors reviewed the Bioassay Sampling and Radiological Protection Program procedures, documentation of dose calculations, the equipment and processes used to evaluate internal exposures to verify that the internal dose results were determined in accordance with 10 CFR 20.1204, and that internal dose was monitored in accordance with 10 CFR 20.1502(b).

The inspectors interviewed licensee management and reviewed as low as reasonably achievable (ALARA) Committee meeting minutes to verify that the licensee uses, 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 interviewed staff, reviewed procedures including MTW-SOP-HP-0201, Determination of Airborne Radioactivity, and observed air samplers in the FMB to verify that the air sampling program complies with the license requirements for airborne concentration surveys, number and use of air samplers to support the respirator warning lights. The inspectors also interviewed HP staff and reviewed procedures to verify that the licensee maintains a program to identify and post areas as Airborne Radioactivity Areas per 10 CFR 20.1003 and 20.1902(d), respectively; through the use of warning lights. The inspectors conducted walk-downs and review HP procedures to verify that the licensee uses access control and respiratory protection for high airborne radioactivity areas where process or engineered controls are not practical. The inspectors interviewed staff and reviewed ALARA record to verify that the licensee was in compliance with license requirements for ventilation and providing dust collectors and scrubbers or other ventilation equipment to reduce exposure as per Section 3.2.2 of the License Application.

The inspectors reviewed procedures, including MTW-SOP-HP-0216, Respiratory Protection Training and Fit Testing, and observed the fit testing of a respirator user to verify that the respiratory protection program, used air sampling sufficient to identify potential hazards as required by 10 CFR 20.1703(c)(1), included the written procedures required by 10 CFR 20.1703(c)(4), and that users were properly trained and qualified in the use of respiratory protection equipment, including the appropriate durations of use. The inspectors interviewed cognizant staff and reviewed test records to verify that maintenance and training programs for respiratory protection equipment met procedural requirements. The inspectors reviewed procedures, including MTW-ADM-HP-0113, Respiratory Protection Program, and interviewed and observed licensee staff to verify that the licensee gives respirator users a medical exam and fit tests them, prior to using respirators and requires respirators be operationally tested prior to each use, and trains users on relief from respirator use in accordance with 10 CFR 20.1703(c), (d), and (e). 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 (record 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. The inspectors reviewed licensee dose calculations for workers who had an

intake during an event to verify that the assumptions used in the calculations were conservative and meet the intent of the regulations and that intake of uranium did not exceed the limits of 10 CFR 20.1201(e).

The inspectors reviewed an NRC Form 5 Equivalent, Occupational Exposure Report for a Monitoring Period, and licensee's presumptive analysis of exposures to verify that the assumptions used in those analyses were adequate and that the licensee was maintaining records of dose in accordance with 10 CFR 20.2106.

The inspectors reviewed the Semiannual Health Physics ALARA Report, January–June 2017, 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 2017 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 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 have been adequately trained to understand the ALARA philosophy and how to implement it in accordance with the license requirements. The inspectors reviewed changes, ALARA meeting minutes, the Semiannual ALARA report, and interviewed licensee staff to determine whether modifications were made to reduce exposures at a reasonable cost, and if ALARA was considered during the engineering phase of changes, and whether ALARA measures did not disproportionately increase non-radiological risks.

The inspectors reviewed event reports (listed in Section 4.0 of the Attachment to this report) and interviewed staff and management to determine whether the licensee implemented a program to evaluate safety-significant events in the area of radiation protection and meets the requirements of 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 the problem and prioritized the resolution of the problem commensurate with its safety significance. The inspectors also evaluated selected events to verify that the licensee complied with the reporting requirements of 10 CFR Part 20 and Part 40.

b. Conclusion

No violations of more than minor significance were identified.

B. FACILITY SUPPORT

1. Permanent Plant Modifications (Inspection Procedure 88070)

a. Inspection Scope

The inspectors reviewed safety-significant plant modifications performed by the licensee during 2017 to determine compliance with NRC regulations; License Application SUB-526, Revision (Rev.) 15; Integrated Safety Analysis Summary, Rev. 14; and the Safety

Demonstration Report Sub-526, Rev. 26; and the Safety Basis. The inspectors reviewed 2016 and 2017 facility project summaries and safety-significant work orders, and selected projects (listed in Section 4.0 of the Attachment to this report) for in-depth documentation reviews and walk-downs, focusing on changes in the FMB. The inspectors reviewed process modifications for compliance with internal licensee procedures MTW-ADM-REG-0120, Management of Change; MTW-ADM-REG-0121, Management of Plant Features and Procedures (PFAP); MTW-ADM-REG-0122, Right of Approval; MTW-ADM-PRO-0100, Development and Implementation of Policies and Administrative Procedures; and MTW-ADM-PRO-103, Development and Implementation of Plant Technical Procedures.

The inspectors reviewed samples of modification packages that included a new method of removing vanadium from the UF_6 Distillation Low Boiler Condenser system and other samples of process equipment changes performed over the last 16 months. The inspectors also reviewed facility material condition related activities associated with the annual shut-down and noted significant repairs made to FMB utility systems, repairs to thermal insulation on FMB process equipment, and repainting FMB processing equipment and internal building surfaces. The inspectors reviewed samples of project packages to determine if the modifications were authorized and performed in accordance with the project specifications and the applicable procedures and regulations (listed above). The inspectors also reviewed samples of operating procedures and technical basis documents to evaluate compliance with the project specifications and compatibility with the revised operating equipment.

The inspectors reviewed samples of modifications to ensure that any potential modifications to an accident sequence described in the Process Hazard Analysis and the Integrated Safety Analysis Summary were properly evaluated and addressed. The inspectors performed walked-downs of process modifications to determine if the “as built” drawings agreed with the installed configuration. For the reviewed process modifications, the inspectors evaluated if operating procedures were revised to reflect the modifications and if training on the modifications was provided.

The inspectors reviewed the licensee’s problem identification and resolution program to verify that issues relating to the preparation and installation of permanent plant modifications were entered into the corrective action program and if corrective actions were adequately addressed in accordance with procedure MTW-ADM-REG-0110, Corrective Action Program.

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 November 30, 2017, 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

Licensee personnel

Name	Title
J. Benard	Material Control & Accountability Leader
M. Dawson	Process Engineer
T. Dodd	Process Hazards Analysis Leader
R. Lindberg	Health Physics Supervisor
V. Mascarenhas	Distillation Process Engineer
C. Metzger	Health Physics Specialist
C. Patterson	Regulatory Affairs Manager
B. Perriello	Automation Process Engineer
R. Sanders	Sr. Quality Engineer
M. Wolf	Nuclear Compliance Director

2. LIST OF REPORT ITEMS

None

3. INSPECTION PROCEDURES USED

88030	Radiation Protection, Appendix B
88070	Permanent Plant Modifications

4. DOCUMENTS REVIEWED

Records:
ALARA – Committee Minutes, dated October 6, 2017
ALARA – Committee Minutes, dated July 21, 2017
ALARA – Committee Minutes, dated June 30, 2017
AUD-2017-001, A-37 ALARA Policy & A-30 Safety Review Committees
AUD-2017-002, A-25 Possession Limits
AUD-2017-003, Respiratory Protection (A-50)
B4591, REV: WIP B, Distillation E462 #2 Low Boiler Condenser P&ID
B4592, REV: WIP B, Distillation E-723 #3 Low Boiler Condenser P&ID
B4593, REV: WIP A, Distillation E-724 #4 Low Boiler Condenser P&ID
B4614, REV: WIP B, Distillation (P-757), LBC's Dry Cleaning Eductor P&ID
B4625, REV: WIP B, Utilities U-469 Equipment Wash Tank P&ID
B4647, REV: WIP B, Utilities Steam for Distillation LBC's P&ID
B4675, REV: WIP B, Fluorination (F-432)"B1" Primary Fluorination Filter Detail for Blowbacks P&ID
B4695, REV: WIP B, FMB Utilities Nitrogen System, P&ID 4 of 4
C4182, REV WIP-B, "U" Recovery (U-22 & U-23), #1 & #2 Wash Tanks P&ID
C4184, REV WIP-A, "U" Recovery (F-16 & U-27), Polishing Filter and Sewering Tank P&ID

Low Boiler Dry Cleaning Project Formal Process Hazards Analysis, eMOC RFC 161663392, dated February 24, 2017
Health Physics External Exposure Investigation Report, dated August 15, 2017
Health Physics External Exposure Investigation Report, dated November 6, 2017
Intake Investigation Report, dated July 25, 2017
Intake Investigation Report, dated September 15, 2017
Landauer Radiation Dosimetry Report, dated October 18, 2017
NRC Form 5 Equivalent, Occupational Exposure Report for a Monitoring Period
RFC 161663392 Install/Commission New Low Boiler Heat Exchanger System (remove vanadium)
RFC 171653949 Create Logic for DCS for the E-641 Heat Exchanger (DRY Clean)
RFC 170PS4028, Replace old style solenoid valves on seismic system emergency shutoff valves.
RFC 161663178, Implement New Design for Automatic Closer Arm used on the 48Y Cylinder Valve Emergency Closer Motor.
Semiannual Health Physics ALARA Report, January–June 2017, dated September 14, 2017
Training Records for FRC 171653949 for 910 MTW-IRP-F2N-0511 Indicator Response Procedure, Rev. 15, and (2) MTW-ARP-F2N-0401, Fluorination Alarm Response
AR#103SEP9105, Extended Pre-Start Safety Review for RFC# 161663392
Verification and Validation for MTW-SOP-DIS-0701, Transfer Wash Tank Liquors, Rev. 8, dated June 1, 2017
Posi3 USB Test Results, Airline Apparatus Test, various dated August 7 and August 8, 2017
Posi3 USB Test Results, Complete SCBA Test, various dates in August
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. 20
MTW-ADM-HP-0101, Bioassay Sampling, Rev. 3
MTW-ADM-HP-0113, Respiratory Protection Program, Rev. 12
MTW-ADM-HP-0118, External Radiation Exposure Control, Rev. 4
MTW-MAN-HP-0001, Internal Dosimetry Technical Basis Manuel, Rev. 1
MTW-SOP-HP-0201, Determination of Airborne Radioactivity, Rev. 9
MTW-SOP-HP-0216, Respiratory Protection Training and Fit Testing, Rev. 12
MTW-SOP-HP-0240, Radiological Contamination Control For On-Site Treatment and Off-Site Treatment of Injuries and Other Medical Issues, Rev. 8
MTW-ADM-QA-0100, UF6 Quality Assurance Program, Rev. 6
MTW-ADM-QA-0160, Performance of Internal Audits, Self-Assessments, and Inspections, Rev. 5
MTW-ADM-PRO-0103, Development and Implementation of Plant Technical Procedures, Rev. 22
MTW-ADM-PRO-0108, Records Management, Rev. 14
MTW-ADM-PRO-0100, Development and Implementation of Policies and Administrative Procedures
MTW-ADM-PRO-0110, Corrective Action Program, Rev. 6
MTW-ADM-REG-0120, Management of Change, Rev. 4
MTW-ADM-OPS-0121, Management of Plant Features and Procedures, Rev. 22
MTW-ADM-REG-0122, Right of Approval for Changes Impacting the NRC Licensing Documents, Rev. 7
MTW-SOP-DIS-0701, Standard Operating Procedure/Transfer Wash Tank Liquors, Rev. 8

Condition Reports Reviewed:
IR-16-2649, IR-16-2650, IR-17-0112, IR-17-0131, IR-17-0400, IR-17-0660, IR-17-0796, IR-17-0855, IR-17-0911, IR-17-0959, IR-17-1113, IR-17-1156, IR-17-1214

Other Documents:
Confined Space Entry Permits, Various
Pre-Entry Meeting Logs, Various
Operator Training Records for eMOC # 161663392
ALARA Committee Meeting June 2017 (slides)
ALARA Committee Meeting October 2017 (slides)
Analytical Reports Tank Entry Permits, November 1, 2017 to November 27, 2017
Urinary Uranium Results Review, November 20, 2017 to November 22, 2017
Corrective Action Plan/NRC Confirmatory Order EA-12-157, Rev. 3.12