July 7, 2000

Mr. J. William Lessig
Plant Manager
Honeywell Specialty Chemicals
P.O. Box 430
Metropolis, IL 62690

SUBJECT: NRC INSPECTION REPORT 040-03392/2000003(DNMS)

Dear Mr. Lessig:

On June 29, 2000, the NRC concluded a routine inspection at your Metropolis, Illinois facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the preliminary findings were discussed with you and members of your staff identified in the enclosed report. On July 6, 2000, our laboratory analysis of smears taken for removable contamination were discussed with Mr. Hugh Roberts of your staff.

The inspection included a review of your operations, health physics and waste management programs. Within these areas, the inspection consisted of a selective examination of procedures and representative records, interviews with personnel, and observations of activities in progress.

Your conduct of activities observed during the inspection at Honeywell was generally characterized by safety conscious operations, sound radiation protection policies and procedures and adequate radiological waste management controls. No violations of NRC requirements were identified during the course of the inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from* the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Patrick L. Hiland, Chief
Fuel Cycle Branch

Docket No. 040-03392
License No. SUB-526

Enclosure: Inspection Report: 040-03392/2000003(DNMS)

cc w/encl: T. Orticiger, Illinois Department of Nuclear Safety
H. Roberts, RSO

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	040-03392
License No:	SUB-526
Report No:	040-03392/2000003(DNMS)
Licensee:	Honeywell
Facility	Metropolis Works
Location:	P.O. Box 430 Metropolis, Illinois
Dates:	June 26 - 29, 2000
Inspector:	D.G. Wiedeman, Senior Health Physicist
Approved By:	Patrick L. Hiland, Chief Fuel Cycle Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY
Honeywell
NRC Inspection Report 040-03392/2000003(DNMS)

Operations Review

- Operations were conducted in accordance with the applicable procedures for the specific tasks being performed. The lockout and tagout program and procedures were adequate, and administrative controls functioned properly. (Section O 1.1)

Radiation Protection

- The internal and external dosimetry program were effectively implemented in accordance with license conditions and 10 CFR Part 20. The inspector concluded that the As-Low-As-Reasonably-Achievable (ALARA) Program for 1998-1999 was effectively implemented based on exposure results. (Section R 3.1).

- The licensee is adequately implementing a respiratory protection program. Licensee staff appeared to be well trained and cognizant of respiratory protection requirements. (Section R 3.2).

- The licensee was effectively implementing the contamination survey and instrument calibration programs. Health physics staff were knowledgeable of current plant operating conditions and conducted surveys and sample analyses in accordance with site procedures. (Section R 3.3)

- Employee and security personnel demonstrated adequate knowledge of contamination monitoring, radiation detection equipment and the appropriate procedures to follow in the event of either a personnel or vehicle contamination incident. (Section R 3.4)

- Annual lapel air sample results for representative employees generally compared with fixed air sampler results. (Section R 3.5)

Waste Management Program

- During the period from December 29, 1999 to June 8, 2000, the licensee shipped 27 shipments of wood chips (shredded wood pallets) that were slightly cross contaminated with unprocessed uranium ore to Waste Control Specialists in Texas and made 57 shipments of contaminated wood chips to Quivira Mines, an NRC licensee located in New Mexico. The total weight for both transfers was 3,491,160 pounds of wood chips No regulatory issues were identified. (Section W1.1)

Report Details

I. Operations

01.1 Conduct of Operations

a. Inspection Scope (88020)

The inspector observed general operations in the Feed Materials Building (FMB), and in the following areas: ore sampling facility, drum and waste storage yards, ore preparation facility, potassium hydroxide muds storage building, waste reprocessing building, and the maintenance building. In particular, the inspector observed the following activities:

- cylinder disconnect, weighing, and storage
- lockout and tagout operations for confined space entry

b. Observations and Findings

The inspector noted that these activities were conducted in accordance with applicable procedures, permits, and postings, and that operators used appropriate protective clothing and equipment.

The inspector observed an operation in the cylinder fill area; cylinder pigtail connect and disconnect, movement and weighing of a full liquid uranium hexafluoride (UF_6) cylinder. These operations were conducted in accordance with applicable procedures for the specific work activities. Operators demonstrated a clear knowledge of the hazards associated with the tasks being conducted in this area and indicated that the training provided by the licensee was effective.

The inspector observed that activities for entering and repairing vessels or tanks on the various floors were conducted in accordance with the applicable tank entry permits issued by the health physics (HP) department. The inspector reviewed several random samples of work packages and observed lockout and tagout operations for a confined space entry into an enclosed vessel. Work planning, hazards analysis, and barrier analysis were adequately described for the work package. During the independent verification of the isolation tags, the inspector, along with the Production Supervisor and Health Physics Supervisor**,** verified that the work package administratively included all appropriate tags. The inspector toured the facility and visually verified that tags were installed properly and provided proper isolation. All tags were hung properly by the plant operators and all systems were properly isolated.

The inspector observed the applicable mechanical piping and electrical energy sources to confirm the proper valve tag lineup. The inspector was informed that the operators relied on system knowledge and experience in determining the appropriate locations for hanging isolation tags prior to conducting work activities; however, the licensee is currently in the process of computerizing the lockout/tagout program.

During the facility tours, the inspector observed housekeeping practices. The inspector noted that attention to housekeeping throughout various areas of the facility continues to improve. The inspector observed good housekeeping practices in general in the FMB. Specifically, the floors of the FMB process areas were clear of combustibles, tools and visible accumulation of uranium on process equipment. However, the inspector did observe several corroded or leaking drums stored on the ore storage pad that contained legacy material. The licensee is in the process of transferring leaking and/or corroded drums of legacy materials into new storage drums.

c. Conclusions

Operations were conducted in accordance with the applicable procedures for the specific tasks being performed. The lockout/tagout program and procedures were adequate, and administrative controls functioned properly.

II. Radiation Protection Program

R3.1 Internal and External Dosimetry Programs

a. Inspection Scope (83822)

The inspector reviewed the plant's internal and external dosimetry program and current bioassay data for plant personnel. Several internal dose investigations for bioassay results, in excess of administrative plant limits, were also reviewed.

b. Observations and Findings

Internal Dosimetry Program

The inspector reviewed the internal dosimetry program procedures and noted that the procedures implemented the internal dosimetry program as described in Chapter 3.2.5 of the license application. Plant staff whose routine duties require entry into radiological contaminated areas or duties requiring direct contact with radioactive material participated in the routine bioassay program. Hourly employees scheduled for sampling submitted routine urine samples bi-monthly; the salary personnel submitted samples on a monthly frequency within one to two days of being notified.

The inspector verified that plant employees, who did not submit urine samples within the applicable scheduled test date, were not generally allowed to clock in until the routine bioassay was collected. Delinquent salary staff were issued delinquency reminder cards until routine bioassays were collected.

Procedure, "Bioassay Sampling," listed scheduling criteria, frequencies and protocols for the bioassay program. The inspector reviewed the current list of plant personnel participating in the internal dosimetry program and found the practices to be in accordance with the procedural requirements. Internal dosimetry logs indicated routine and special bioassays were conducted according to the criteria described in the procedure.

Section 1 of the licensee's procedure, "Bioassay Sampling," establishes two administrative action levels (flags) for routine or special uranium bioassay exposure results. The limits are 15 and 60 micrograms per liter of uranium (μg/L). Bioassay results greater than the 15 μg/L limit requires re-sampling. Bioassay results in excess of 60 μg/L requires an investigation and an intake restriction evaluation, in addition to daily re-sampling until bioassay results returned to levels below 15 μg/L. The inspector reviewed several corresponding investigation reports of bioassay results that exceeded 60 μg/L from May 6, 1999 to December 22, 1999. The inspector determined the investigations were thorough and extensive in determining the root cause of the uptakes. In all cases, the investigation results determined that the intakes were less than the toxicity limit for soluble uranium of 10 milligrams/week required by 10 CFR 20.1201(e).

Several other investigations for bioassay results above 15 μg/L, but below 60 μg/L, were also reviewed and determined to be equally thorough and extensive. All re-samples for bioassays above administrative limits were conducted until a final result below 15 μg/L was observed.

A review of 1999 dosimetry data for the plant indicated that the average and maximum Committed Effective Dose Equivalent (CEDE) respectively, was 53 and 438 millirem. The average and maximum Total Effective Dose Equivalent (TEDE) for 1999 was 155 and 1,075 millirem and the average and maximum TEDE for 1998 was 486 and 1,495 millirem. These averages were within 20 percent of the 10 CFR 20 maximum dose limits for radiation workers. The inspector determined that the ALARA Program for 1998-1999 was effectively implemented based on exposure results.

External Dosimetry Program

External dose is monitored by means of thermoluminescent dosimeters (TLD) badges supplied by an outside vendor. The stated lower limit of detection for gamma dose measurement is 10 millirem (mrem) {100 μSv }. The dosimetry service that provided the dosimeters to the site and processed the dosimeters at the end of the badging period is accredited by National Voluntary Laboratory Accreditation Program (NVLAP) and as such meets the requirements in ANSI Standard HPS N13.11-1993, "Personnel Dosimetry Performance - Criteria or Testing."

The dosimeter exchange period at the site is monthly for hourly workers and quarterly for salaried workers. The dosimetry records from 1998 to 1999 indicated that 386 and 369, respectively, workers were issued dosimetry for each of the respective year and the collective dose for the site was 197 person-rem for 1998 and 60 person-rem for 1999. Most of the collective dose was accumulated by workers in the ore preparation area, with the health physics staff accumulating the smallest percent of the dose. The number of workers that exceeded NRC's level requiring monitoring (>500 millirem/year) was 30 in 1998, and 12 for 1999.

c. Conclusions

The inspector concluded from his review of the dosimetry programs at Honeywell that their internal/external radiation monitoring programs were adequate.

R3.2 Respiratory Protection Program

a. Inspection Scope (83822)

The inspector reviewed the respiratory fit testing facility and program and toured the licensee's laundry facility where respirators are sanitized and repaired.

b. Observations and Findings

The inspector observed respirator fit testing activities being conducted during the week. The licensee appropriately requires the medical determination that the worker is approved for the use of respiratory protection. The respirator program and fit testing activities effectively addressed all the relevant NRC regulatory requirements and OSHA issues concerning respirator use. The licensee tracks all plant employees' respiratory certification via a computer database. The HP staff were knowledgeable on proper respirator use and hygiene, and addressed any questions regarding respiratory protection and the plant policies.

Facility tours by the NRC inspector showed that respiratory training appeared effective. Selected plant employees were observed wearing respirators and were utilizing them appropriately. Interviews with operators regarding respiratory protection indicated that the operators were cognizant of issues related to the proper use of respiratory protection.

The inspector also toured the respirator wash and inspection facility. There appeared to be a large inventory of spare parts for the repair and maintenance of respiratory protection equipment for plant staff. The inspector observed the "respirator wash and inspection facility" operator conduct appropriate cleaning activities of several respirators in accordance with the requirements listed in the respiratory program. In addition, respiratory program, Chapter 3.4, "Respirator Monitoring for Radioactivity," contains provisions and restrictions for the reuse of respirator cartridges; respirator cartridges shall be monitored on both sides (inlet and outlet) of the cartridge for contamination prior to reuse. The contamination level shall be less than 300 count per minute above background level. The inspector observed that the "respirator wash and inspection facility" operator monitored both inlet and outlet sides. The inspector noted that several hundred of the cartridges monitored were appropriately disposed due to a high contamination level on the inlet side of the cartridge.

c. Conclusions

The licensee is adequately implementing a respiratory protection program. Licensee staff appeared to be well trained and cognizant of respiratory protection requirements.

R3.3 Radiological Surveys and Survey Instrumentation

a. Inspection Scope (83822)

The inspector reviewed records of daily, weekly and monthly contamination surveys and accompanied security staff during vehicle surveys. The inspector also reviewed records of instrument calibrations, and observed the use of radiation survey instruments.

b. Observations and Findings

The inspector noted that routine facility alpha contamination surveys are performed in accordance with the frequency and action levels specified in Table 3.2.6, “Surface Contamination Monitoring,” of the license application. The inspector reviewed HP Procedure Manual Part I, Section 2, “Contamination Control,” dated March 9, 1999 and accompanied a security staff member during a routine vehicle contamination survey. The inspector also observed a health physics staff member appropriately analyze smears taken on scrap metal waste and staff explained smear reports generated by the instrument. Health Physics staff highlighted that smears above the administrative limits would be scheduled for decontamination and subsequently resurveyed. A selected review of records from January 3, 2000 to June 21, 2000 of routine plant smear surveys indicated that some weekly smears were above the administrative limit. The affected areas were decontaminated in a timely manner. Health physics staff were knowledgeable of process hazards when performing surveys, and activities observed by the inspector were conducted in accordance with HP procedures.

Frequency of calibration and instrumentation operability was adequately tracked by the HP staff. During facility and HP laboratory tours by the inspector, the inspector observed that survey instruments in use appeared operational and were within the current calibration period.

Also during the facility tours, the inspector noted that radioactive material, radiation and airborne radioactivity areas were adequately posted in accordance with the requirements of 10 CFR Part 20. Labeling of radioactive materials and containers were consistent with 10 CFR Part 20, and the exemptions allowed by Part I, Chapter 1, of the license for radioactive materials and containers.

c. Conclusions

The licensee was effectively implementing the contamination survey and instrument calibration programs. Health physics staff were knowledgeable of current plant operating conditions and conducted surveys and sample analyses according to site procedures.

R3.4 Contamination Monitoring

a. Inspection Scope (83822)

The inspector observed employees, visitors and contractors performing self-monitoring for contamination prior to leaving the Restricted Area.

b. Observations and Findings

Radiological survey instrumentation for exiting the plants restricted area is located by the employee exits and also by the security guard post, where visitors and employees exit. Selected survey instrumentation used for exit monitoring satisfied the required calibration frequency. Observations of employee practices for performing self-monitoring indicated that radiological training appeared adequate in the use of radiation detection equipment. Interviews with several employees at the exit stations indicated that they were familiar with the appropriate actions and procedure to contact HP in a contamination event.

Observations and interviews with security guards indicated that the HP program for training security personnel on contamination surveys was effective. This was demonstrated on several occasions during the inspection. The inspector observed security personnel stop an offsite delivery person from exiting the plants restricted area. The individual was observed performing an adequate radiological exit survey. The security guard provided verbal guidance regarding the HP decontamination procedure to delivery person and visitors to ensure proper self monitoring is performed. In addition, Security personnel were observed conducting radiological surveys of vehicles leaving the restricted area. The inspector interviewed selected security staff and determined that they were knowledgeable in the use of radiation detection equipment and the appropriate procedure to follow in the event of either a personnel or vehicle contamination. In addition, the security personnel were knowledgeable in ensuring that proper exit monitoring is conducted by visitors and employees.

c. Conclusions

Employee and security personnel demonstrated adequate knowledge of contamination monitoring, radiation detection equipment and the appropriate procedure to follow in the event of either a personnel or vehicle contamination. All surveys observed were performed in accordance with Part 15 and 21 of the license application, “Personnel Contamination Procedures”, and “ Procedures for monitoring empty transport vehicles”, dated August 19, 1996.

R3.5 Lapel Air Sampling

a. Inspection Scope (83822)

The inspector reviewed lapel air sample records for the period January through December 1999 to verify the results and determine compliance with the requirements in 10 CFR Part 20.

b. Observations and Findings

Chapter 3.2.3 of the license application requires, in part, that annually, employee lapel air samples shall be taken on representative employees to verify the results of fixed air samplers located on plant property. The licensee utilizes approximately 73

fixed-location, continuous air samplers to determine airborne radioactivity levels in various uranium-processing areas within the plant. The licensee monitors airborne activity levels to determine whether or not respirators are required for work in those areas. The licensee also uses the air sampler results to identify areas where process upsets or spills have occurred. The inspector reviewed and compared the average lapel air sample results with the average fixed air sample results. The results indicated that the average lapel air sample results were slightly higher than the average fixed air sampler values. However, the inspector noted that the average lapel air sample results were below license limits. Since the licensee did not rely on general air samples for calculating internal exposure, the difference in air sample results was not a significant concern based on the guidance in Regulatory Guide 8.25, "Air Sampling in the Workplace," but nevertheless gave an indication that the licensee's fixed air samplers in the uranium processing areas were generally measuring the uranium concentrations to which workers are exposed.

c. Conclusions

Annual lapel air sample results for representative employees generally compared with fixed air sampler results and were below the Annual Limit of Intake (ALI) limits specified in 10 CFR Part 20.

III Waste Management Program

W1.1 Radiological Protection and Controls

a. Inspection Scope (83822)

The inspector reviewed selected shipping and transfer records for the period from December 29, 1999 to June 26, 2000 involving the transfer of 3,404,220 pounds of contaminated wood chips (shredded wood pallets) to Waste Control Specialist in Texas and to Quivira Mines, an NRC licensee located in New Mexico. In addition, the inspector toured the scrap iron waste storage facility and took independent direct radiation measurements and smears for removable contamination.

b. Observations and Findings

From December 29, 1999 to June 26,2000, the licensee transferred a total of 3,404,220 pounds of wood chips (shredded wood pallets) that were slightly cross contaminated with unprocessed uranium ore to the above referenced licensees in Texas and New Mexico. The licensee maintained appropriate documentation and shipping papers for these transfers.

Currently the licensee is in the process of evaluating the extent of low level contamination on approximately 90,000 cubic feet (ft^3) of scrap metal to be transferred to a contractor as 10 CFR 40.13 waste (unimportant quantities of source material). During the inspection the inspector took direct radiation measurements with a Ludlum Model 19 Micro-R-meter, Serial No. 21567, calibrated on May 23, 2000. Typical radiation levels indicated <100 microroentgens/hour on contact, except on several

obviously contaminated pieces of scrap metal that contained small quantities of yellow cake. The inspector also took 12 smears for removable contamination on randomly selected pieces of scrap metal in various geometric configurations for laboratory analysis.

c. Conclusions

The licensee adequately implemented its waste control procedures and transferred its contaminated wood chips in accordance with the requirements in 10 CFR Part 20, 40 and 49 CFR.

Direct radiation measurements and smear tests indicated that the radiation levels were consistent with those found in other products authorized in 10 CFR 40.13 (unimportant quantities of source material). No regulatory issues were identified.

IV. Management Meeting

X Exit Meeting Summary

The inspector presented the inspection results to members of the plant staff and management at the conclusion of the inspection on June 29, 2000. The plant staff acknowledged the findings presented. The inspector asked the plant staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Honeywell Specialty Chemicals

* M. Davis, Health Physics Supervisor
* W. Lessig, Plant Manager
*# H. Roberts, Health Physics Manager
* R. Allshouse, Supervisor, Quality Assurance
D. Heine, Production Supervisor

Other members of the licensees' staff were also contacted during the inspection.

Contacted by telephone on July 6, 2000 to discuss laboratory results.

INSPECTION PROCEDURES USED

IP 83822	Radiation Protection
IP 88020	Operations Review

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	As-Low-As-Reasonably-Achievable
ANS	American National Standard
CEDE	committed effective does equivalent
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Material Safety
DOT	Department Of Transportation
FMB	Feed Materials Building
HP	Heath Physics
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
QA	Quality Assurance
TEDE	total effective dose equivalent
ug/L	Micrograms Per Liter
UF_6	Uranium Hexafluoride