February 2, 2010

Mr. Larry Smith, Plant Manager
Honeywell Metropolis Works
Honeywell Specialty Materials
P.O. Box 430
Highway 45 North
Metropolis, Il 62960

SUBJECT: REVISED SAFETY EVALUATION REPORT FOR THE APPROVAL OF REQUEST TO TRANSFER SCRAP MATERIALS UNDER 10 CFR 40.13, "UNIMPORTANT QUANTITIES OF SOURCE MATERIAL," TO RESOURCE CONSERVATION AND RECOVERY ACT SUBTITLE C FACILITY IN GRAND VIEW, IDAHO

Dear Mr. Smith:

By letter dated November 17, 2009 (Agencywide Document Access and Management System [ADAMS] Accession Number ML093030377), the U.S. Nuclear Regulatory Commission (NRC) staff approved the transfer of 90,000 cubic feet of scrap materials from Honeywell Metropolis Works to U.S. Ecology Idaho in accordance with Title 10, *Code of Federal Regulations* (10 CFR), Section 40.13, "Unimportant Quantities of Source Material." The staff's detailed review of Honeywell's July 16, 2009 (ADAMS Accession Number ML0920404881), submittal was provided in the Safety Evaluation Report (SER) as part of the November 17, 2009, letter.

Since then, the staff has noted that the November 17, 2009, SER contained an error in the inadvertent intruder analysis calculation. Specifically, the affected change is in the last paragraph of the SER, Section 4.2, "New Proposed Scenario," where the resulting potential dose to inadvertent intruders should be 0.0731 millisievert per year (mSv/yr) [i.e., 7.31 millirem per year (mrem/yr)], not 0.42 mSv/yr [i.e., 42.2 mrem/yr], as contained in the November 17, 2009, SER. The findings and conclusions associated with the staff's review still remain the same because the resulted dose remains significant lower than the dose threshold to the general public, which is 1 mSv/yr [i.e., 100 mrem/yr]. The corrected SER is enclosed.

If you have any questions regarding this action, please contact Ms. Tilda Liu at (301) 492-3217 or via e-mail to Tilda.Liu@nrc.gov.

In accordance with 10 CFR Section 2.390, “Public Inspections, Exemptions, Request s for Withholding,” a copy of this letter will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Thomas G. Hiltz, Chief
Advanced Fuel Cycle, Enrichment,
and Uranium Conversion Branch
Special Projects and Technical
Support Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

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

Enclosure: As stated

cc:
Michael Greeno, Regulatory Affairs Manager
Honeywell International, Inc.
P.O. Box 430
Highway 45 North
Metropolis, IL 62960

Gary W. McCandless, P.E.
Bureau Chief - Environmental Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Brian R. Monson, Program Manager
Department of Environmental Quality
410 North Hilton
Boise, ID 83706

In accordance with 10 CFR Section 2.390, "Public Inspections, Exemptions, Request s for Withholding," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room, or from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Thomas G. Hiltz, Chief
Advanced Fuel Cycle, Enrichment,
and Uranium Conversion Branch
Special Projects and Technical
Support Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

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

Enclosure: As stated

cc:
Michael Greeno, Regulatory Affairs Manager
Honeywell International, Inc.
P.O. Box 430
Highway 45 North
Metropolis, IL 62960

Gary W. McCandless, P.E.
Bureau Chief - Environmental Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Brian R. Monson, Program Manager
Department of Environmental Quality
410 North Hilton
Boise, ID 83706

DISTRIBUTION:

FCSS r/f	J. Shaffner, FSME	C. McKenney, FSME	G. Suber, FSME
J. Henson, R-II	J. Pelchat, R-II	A. Schwartzman, FSME	

ML100220407

OFFICE	AFCB	FMB	AFCB
NAME	TLiu	THristopoulos	THiltz
DATE	1/25/10	1/27/10	2/02/10

OFFICIAL RECORD COPY

DOCKET: 40-3392

LICENSEE: Honeywell International Inc.
Metropolis, Illinois (IL)

SUBJECT: SAFETY EVALUATION REPORT FOR REQUEST TO TRANSFER SCRAP MATERIALS UNDER 10 CFR 40.13, "UNIMPORTANT QUANTITIES OF SOURCE MATERIAL" [REVISED]

1.0 BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) regulates Honeywell Specialty Materials Metropolis Works (MTW) facility in Metropolis, IL, under Materials License SUB-526. The primary activity of Honeywell MTW is the conversion of uranium ore concentrates (yellowcake or U_3O_8) to uranium hexafluoride (UF_6). The UF_6 product is used as feed material for uranium enrichment plants. The U.S. Atomic Energy Commission first authorized operations at the site on December 17, 1958. The license was last renewed for a 10-year term, expiring May 11, 2017.

Honeywell initially requested to dispose of scrap materials under Title 10 of the *Code of Federal Regulations* (10 CFR) 40.13, "Unimportant Quantities of Source Material," on July 23, 2007, (ADAMS Accession No. ML0721502086). The request referenced prior approvals received from NRC dated August 27, 1999, and July 19, 2000. Specifically, Honeywell requested NRC concurrence to dispose of up to 90,000 cubic feet (ft^3) of scrap material at Waste Control Specialists Inc. (WCS), located near Midland, Texas (TX). The NRC staff approved this transfer pursuant to 10 CFR 40.13(a) on October 1, 2007 (ADAMS Accession No. ML0726905391).

2.0 PROPOSED ACTION

On July 16, 2009, Honeywell notified the NRC of its intention to transfer the previously approved 90,000 ft^3 of unimportant quantities of source material (industrial scrap material) to the U.S. Ecology Idaho (USEI) Resource Conservation and Recovery Act (RCRA) Subtitle C facility located near Grand View, Idaho (ID) for disposal (ADAMS Accession No. ML0920404881). The request referenced a prior approval received from NRC dated October 1, 2007. Specifically, Honeywell MTW requested NRC concurrence to transfer scrap material to a RCRA Subtitle C facility owned and operated by USEI near Grandview, ID, instead of a site operated by WCS near Midland, TX, per its original request of July 23, 2007.

3.0 REGULATORY REQUIREMENTS

According to 10 CFR 40.13(a), persons are exempt from the regulations if the source material is by weight less than 0.05 percent of the mixture, compound, solution, or alloy. However, it has been Commission Policy to review potential use and disposition scenarios on a case-by-case basis to ensure public health and safety.

According to 10 CFR 40.13(a), persons are exempt from the regulations if source material is by weight less than 0.05 percent of the mixture, compound, solution, or alloy. In this case a 0.05 percent by weight limit for natural uranium is equivalent to 12.5 becquerel per gram (Bq/g) (i.e., 338.5 pico-curie per gram [pCi/g]). A review is necessitated to ensure that this transfer does not

pose a concern to public health and safety. According to Commission policy [*Federal Register*: August 28, 2002 (Volume 67, Number 167), Proposed Rules, Page 55175-55179], the NRC will review potential use and disposition scenarios on a case-by-case basis to ensure that exposure limits in 10 CFR Part 20 are not exceeded.

4.0 STAFF REVIEW AND ANALYSIS

The licensee supplied information to evaluate the possible exposure for members of the public from the transporting and disposal of the material at the USEI disposal site. Additional details considered in this report were derived from the initial Safety Evaluation Report, dated October 1, 2007. These scenarios consider dose to the transportation workers and USEI workers, determined to be the maximally exposed members of the public, associated with the transport and disposal of materials as well as the post closure dose to the general public. The USEI site is licensed by the State of Idaho for permitting RCRA disposal and is not licensed by the NRC for disposal of low-level waste. The state RCRA permit does allow the disposal of exempted radioactive material including uranium as either naturally occurring radioactive material or unimportant quantities of source material.

4.1 INITIAL PROPOSED SCENARIO

The initial proposed scenario, approved in the October 1, 2007 letter, included the use of trucks to transport the material from Metropolis, Illinois, to the WCS site and an industrial scrap metal disposal scenario to evaluate the dose received from disposal of the material at the site. The mass-based normalized effective dose equivalents for all pathways associated with each scenario were taken from the tables in NUREG-1640, “Radiological Assessments for Clearance of Materials from Nuclear Facilities,” Vol. 3, Appendix F, dated June 2003.

For the truck driver scenario the normalized effective dose equivalent from all pathways resulted in a mean mass-based dose of 0.025 micro-seivert per year (μSv/yr) per Bq/g according to Table F1.38. Assuming a concentration of 12.5 Bq/g (i.e., 338.5 pCi/g) of U-238, the dose to the truck driver was calculated to be 0.31 μSv/yr (i.e., 0.03 milirem per year [mrem/yr]).

An industrial scrap metal disposal scenario was applied to the material once it arrived at the WCS site. The residual radioactivity associated with this scenario is assumed to be from U-238 since, according to Table F1.59, the normalized effective dose equivalent from all pathways resulted in a mean mass-based dose of 0.33 μSv/yr per Bq/g. This value is conservative for U-234, which has a mean mass-based dose of 0.00099 μSv/yr per Bq/g, according to Table F1.59. Due to the small concentrations found in the scrap material, U-235 does not substantially add to the dose. Considering a concentration of 12.5 Bq/g (i.e., 338.5 pCi/g), the industrial scrap metal scenario calculated mean dose of 4.13 μSv/yr (i.e., 0.41 mrem/yr). Even if this concentration is five times the concentration of 12.5 Bq/g (i.e., 338.5 pCi/g) of U-238, the calculated dose would be 20.6 μSv/yr (i.e., 2.1 mrem/yr) for the industrial scrap metal disposal scenario.

4.2 NEW PROPOSED SCENARIO

The new scenario proposes using a combination of trains and trucks to transport the material from Honeywell to the disposal cells at USEI. Trains will provide the transportation from the MTW facility in IL to the USEI facility in ID. Trucks will be used to up-load and off-load the waste at both locations. For the USEI workers, an industrial scrap metal disposal scenario similar to that described above is considered.

The multi-modal transportation approach will decrease the dose associated with the transportation of the scrap materials since the maximum exposed individual for the original scenario was the truck driver based on proximity to the waste. Since the material transported cross country by train is covered and the train driver is a distance away from the material and not involved in the loading and unloading process, the dose received rail transport personnel is well within the envelop calculated for the truck driver and is not considered to be an issue. Common procedures and precautions considered in packaging and route planning will ensure that potential doses to members of the general public during rail transport will be lower than that for highway transport.

Upon arrival at USEI, the gondolas will be received at the Idaho rail transfer facility. At this point the gondolas will be surveyed and the materials offloaded and put into dump trucks using excavators. Once each truck is loaded the truck and trailer are surveyed and proceed to the disposal site. Once deposited, cell workers will spread and compact the disposal material. It should be noted that the industrial scrap metal disposal scenario considered in NUREG-1640 incorporates dose received from the onsite transport of material from the transfer facility to the disposal cell. Therefore, no additional consideration of the dose associated with transporting the material onsite (i.e., dose to the dump truck drivers) is needed.

The USEI permit requires that it demonstrate that no person will receive a dose exceeding 15 mrem for 1000 years after closure of facility. A site-specific Residual Radioactivity (RESRAD) computer code[1] was used to demonstrate that the materials from Honeywell will not cause a significant groundwater dose post-closure. Since the length of time materials will be shipped to USEI is unspecified, the model assumes that the entire volume of the contaminated zone contains the radionuclides of concern at the concentration they are in the waste stream. The analysis indicated that the maximum projected annual dose, 7.6×10^{-23} mSv (i.e., 7.6×10^{-21} mrem), would be in year 1000. NRC staff agrees that it is readily apparent that receipt of these materials could continue for an indefinite time without creating a significant effect on post-closure dose via the groundwater pathway.

The NRC staff performed an additional analysis for the potential dose to inadvertent intruders. A screening level approach was used to determine if more detailed modeling would be required. This analysis assumed that someone would intrude into the site and then live on the site. The waste would be disturbed by basement or other construction bringing it to the surface, which is generally the most conservative type of intrusion scenario. It is assumed that the waste was disposed at the top of a cell without any other waste present to reduce the concentrations. It is further assumed that the cover material would only result in a factor of four reduction in the concentration due to inadvertent mixing as the site was disturbed, resulting in an average concentration of 3.13 Bq/g (i.e., 84.45 pCi/g). To convert the concentration to dose the staff used the screening criteria provided in Appendix H of NUREG-1757, Volume 2, "Consolidated Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria," dated September 2006, which provides a conservative concentration equivalent to 0.25 mSv/yr (i.e., 25 mrem/yr). The resulting dose is 0.0731 mSv/yr (i.e., 7.31 mrem/yr), which is significantly below the 1 mSv/yr (i.e.,100 mrem/yr) dose threshold for the general public. As the screening level approach is extremely conservative, and is evaluating a low probability

[1] The evaluation of sites with radioactive contamination was a problem until the RESidual RADioactivity (RESRAD) Computer Code was first released in 1989. The RESRAD code has been updated since then to improve the models within the codes, to operate on new computer platforms, to use new state of science radiation dose and risk factors, and to calculate cleanup criteria ("Authorized Limits") for radioactively contaminated sites.

scenario, the results indicate that members of the public would not receive doses above the public dose limit if intrusion were to occur.

5.0 FINDINGS

The initial proposed scenario for transferring 90,000 ft^3 of scrap material with a maximum concentration of 12.5 Bq/g (i.e., 338.5 pCi/g) of natural uranium for burial according to 10 CFR 40.13 "Unimportant Quantities of Source Material" and current NRC policy has been previously accepted. It was determined that the dose received from the industrial scrap metal disposal scenario and the truck driver scenario were less than 0.01 mSv/yr (i.e., 1 mrem/yr), which is less than the Commission's policy of 0.25 mSv/yr (i.e., 25 mrem/yr). Modifying the initial proposed scenario to dispose of scrap materials at USEI and incorporate the use of trains along with trucks to transport the material further decreases the dose received by individuals. Further review of the post-closure groundwater dose using RESRAD with conservative site-specific parameters confirmed that the maximum projected dose of $7.6x10^{-23}$ mSv (i.e., $7.6x10^{-21}$ mrem), would not occur for 1000 years. The additional scoping analysis for potential dose to inadvertent intruders following closure of the site is also below the NRC's 100 mrem/yr dose threshold for the general public.

Based on the analyses summarized above, the NRC staff finds the transfer of 90,000 ft^3 of scrap materials to USEI in accordance with 10 CFR 40.13 is acceptable and in accordance with current Commission policy.

6.0 PRINCIPAL CONTRIBUTORS

Adam Schwartzman, Technical Reviewer, FSME/DWMEP
James Shaffner, Project Manager, FSME/DWMEP

7.0 REFERENCES

Letter from Mitch Tillman from Honeywell Specialty Materials Metropolis Works to the NRC, dated July 16, 2009 (ADAMS Accession No. ML092040490).

US Ecology Idaho, Inc., Honeywell Metropolis Evaluation in Support of Alternative Waste Disposal Procedures For Unimportant Quantities of Source Material, July 16, 2009 (ADAMS Accession No. ML092040490).

U.S. NRC, "Radiological Assessments for Clearance of Materials from Nuclear Facilities," Appendices F and G, NUREG-1640, Vol.3, June 2003 (ADAMS Accession No. ML032250625).