Performance Materials and Technologies
Honeywell
P.O. Box 430
2768 North US 45 Road
Metropolis, IL 62960

April 19, 2012

Attention: Document Control Desk
Director, Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

References:

1) Docket No. 40-3392; License SUB-526

2) Letter from Larry Smith, Plant Manager Honeywell to the NRC, Surface Impoundment Decommissioning Plan, dated December 2, 2010

3) Letter from Larry Smith, Plant Manager Honeywell to the NRC, Supplemental Information for the Surface Impoundment Decommissioning Plan Application, dated February 25, 2011

4) Letter from NRC to Larry Smith, Plant Manager Honeywell, Completion of Acceptance Review for Honeywell Metropolis Works' Surface Impoundment Decommissioning Plan (TAC L32759), dated March 17, 2011

5) Site Visit conducted Wednesday, October 5, 2011, at Honeywell Metropolis Works' Facility

6) Letter from NRC to Larry Smith, Plant Manager Honeywell, Request for Additional Information Regarding the Surface Impoundment Decommissioning Plan for Honeywell Metropolis Works (TAC L32759), dated November 4, 2011

7) Letter from Larry Smith, Plant Manager Honeywell to the NRC, Request for 30 day extension to respond to RAI's dated December 29, 2011

8) Letter from NRC to Larry Smith, Plant Manager Honeywell, NRC approval of Request for 30 day extension of RAI's and continuance of overall submittal review dated January 17, 2012

9) Letter from NRC to Larry Smith, Plant Manager Honeywell, NRC Request for Additional Information (RAI) Supplemental Summary of 2011 Pozzolan testing information dated March 21, 2012 (TAC L32759)

Subject: Response to Request of Additional Information (RAI) Concerning the Supplemental Summary of 2011 Pozzolan Treatability Testing Information for Surface Impoundment Decommissioning Plan (TAC L32759)

Honeywell Metropolis Works hereby submits the following response to the request for additional information (Ref. 9) issued by the NRC on March 21, 2012, and received by Honeywell Metropolis Works Facility (MTW) on March 26, 2012.

NMSS01

If you or your staff have any questions, require additional information, or wish to discuss this, please contact Mr. Robert Stokes, Regulatory Affairs Manager, at (618) 524-6341.

Sincerely,

Dean Palmer on behalf of LAS

Larry A. Smith
Plant Manager

cc: John Sulima, NMSS Project Manager

MARCH 21, 2012 REQUEST FOR ADDITIONAL INFORMATION--SUPPLEMENTAL SUMMARY OF 2011 POZZOLAN TREATABILITY TESTING INFORMATION TO SURFACE IMPOUNDMENT DECOMMISSIONING PLAN DATED DECEMBER 2, 2010

1) In its summary of 2011 supplemental pozzolan treatability testing, the licensee stated that the materials from the four ponds were combined into a weighted average composite sample of Pond B, C, D, and E based on the approximate in-situ pond material quantities (15 percent, 15 percent, 10 percent, and 60 percent weight fractions from Ponds B, C, D, and E, respectively). This composite sample was used to conduct the supplemental pozzolan treatability testing. The staff has the following questions:

   a. Mixing the soils from each pond into a composite sample (only one) may not represent the actual conditions that will be found in each pond when performing the solidification/stabilization process.

   RESPONSE 1a: The treatability testing was performed to identify pozzolans (alternatives to Portland cement) that will meet the unconfined compression strength (UCS) criterion of 25 psi. In order to evaluate a wide range of potential pozzolans, and to compare their performance relative to one another, only one composite sample of pond material was used for this testing.

   It is true that the pond material condition (i.e., percent moisture) varies between the ponds, and within each pond. Pond materials with higher percent moisture may require greater pozzolan addition by weight to satisfy the UCS criterion than indicated by the composite sample testing. Conversely, drier pond materials could satisfy the criterion with less pozzolan.

   Additional testing will be performed to optimize the pozzolan mix for each pond prior to full-scale solidification. This additional testing will occur after a remediation contractor (and pozzolan material) has been selected. The testing will incorporate the expected range in percent moisture within each pond, as indicated by the hundreds of samples collected during the 2009 pond characterization sampling. The additional testing will serve as basis for the corresponding pozzolan mix (percent by weight) for each pond.

   Full-scale solidification will effectively blend the pond materials within the equipment mixing volumes both vertically and laterally.

   b. Explain if the samples from each pond, used to prepare the composite sample, were collected at the same elevation.

   RESPONSE 1b: Supplemental pond material samples were collected in May 2011 for the treatability testing. Samples were collected from two boring locations in each of Ponds B, C, D, and E. At each boring location in Ponds B, C, and E, material was recovered from four, three-foot long sample depth intervals from approximately 0-3 feet, 3-6 feet, 6-9 feet, and 9-12 feet below the pond material surface. In Pond D, samples were collected in multiple three-foot long depth intervals (as needed) from the pond material to approximately 12 feet below the Pond D standing water level. The collected samples were then combined to form composite samples for each pond.

Once received at the laboratory, the individual pond composite samples were mixed into a single composite for testing based on the 15%:15%:10%:60% weight fractions from Ponds B, C, D, and E, respectively.

The pond material surface varies within a few feet at each pond (several feet in Pond D), as indicated by the topographic survey shown on Drawing C-1 of the Engineering Report (CH2M HILL, 2010). As shown therein, the approximate range of pond material surface elevations in each pond is as follows:

- Pond B: 380 to 382.5 feet
- Pond C: 379.5 to 381 feet
- Pond D: 370 to 378.5 feet
- Pond E: 378 to 379.5 feet

Sample elevations, based on depths below the pond material surface, reflect similar variations.

c. Explain if lateral variability was considered during preparation of the composite sample. Were sensitivity analyses performed for the composite sample to evaluate the significance of variability?

RESPONSE 1c: Lateral variability was not explicitly considered during preparation of the composite sample except to the extent that the composite sample was made up of multiple samples from all four ponds. While sensitivity analyses have not been performed to date, additional testing will be performed to evaluate the significance of variations between and within each pond prior to full-scale solidification (See Response 1a). In addition, as noted in Response 1a, full-scale solidification will effectively blend the pond materials within the equipment mixing volume both vertically and laterally.

d. Explain if the samples were only tested to determine the strength (unconfined compression strength) and if you plan to perform other testing, such as, hydraulic conductivity and leachability.

RESPONSE 1d: The objective of the treatability testing was to evaluate the potential for various pozzolans to satisfy the UCS criterion. Other tests and observations were also performed on the cured samples (moisture content, bulk density, and free liquids); these were considered secondary to UCS and were therefore not included in the report.

We do not currently plan to perform other test methods (i.e., hydraulic conductivity or leachability) on the solidified pond material to support the NRC decommissioning plan review. The dose modeling presented in the decommissioning plan did not take credit for the expected improvements in these parameters via solidification, so the submitted RESRAD modeling is considered conservative.

e. When do you plan to select the pozzolan material to be used for solidification? Once the material is selected, do you plan to perform additional treatability testing for each pond?

RESPONSE 1e: The pozzolan material will be proposed by the candidate remediation contractors during the bid process. Once the remediation contractor and a pozzolan are selected, additional testing will be performed to demonstrate acceptance of the pozzolan

and to optimize the mix design for each pond prior to full-scale solidification (See Response 1a). Field demonstration testing will also be performed prior to full-scale solidification (See Response 2a).

2) Guidance described in
Development of Performance Specifications for Solidification/Stabilization (S/S-1, 2011) prepared by the Interstate Technology & Regulatory Council, Solidification/Stabilization Team, recommends to perform a *pilot test in the field* after a design mixture is determined and before full-scale implementation. The pilot test is intended to verify the parameters determined during the bench-scale testing.

   a. Do you plan to perform a pilot test in the field?

   RESPONSE 2a: Prior to full-scale solidification, the remediation contractor will perform a field demonstration test within one or more of the ponds. This testing will incorporate the proposed pozzolan mix (optimized for the pond as described in Response 1a), mixing to the required vertical extents within the pond, and using the proposed mixing equipment. A field demonstration work plan will also be developed to document the basis for which pond or ponds are selected based on moisture contents and other characteristics that will influence the process.

   b. Provide additional information regarding the full-scale implementation (i.e., pretreatment of soil, mixing method, etc.).

   RESPONSE 2b: Means and methods for full-scale solidification will not be specified by Honeywell; the remediation contract will be based on performance criteria. These criteria will include the minimum solidified UCS (25 psi at 28 days) and required solidification extents (to the EPDM liner on pond sideslopes, and to within 1 foot of the EPDM liner in other areas).

   The candidate remediation contractors will fully describe their proposed full-scale implementation methods (and proposed pozzolan material) during the bid process. Once selected, the remediation contractor will provide a detailed work plan for Honeywell review and approval. The remediation contractor will then perform the field demonstration test (see Response 2a).

   During prior discussions with potential remediation contractors in 2010, multiple potentially feasible full-scale solidification methods were identified.

   Following is a conceptual approach that may or may not be used:

   1. Prior to solidification: Perform a grid of soundings/probe holes to confirm the EPDM liner elevations with respect to location in each pond.

   2. Side-slope areas: Use a horizontal auger mixer with protective cage deployed from a telescoping arm excavator.

3. Other areas (relatively flat bottom liner): Use a deep soil mixing rig with a large-diameter vertical auger mixer. Advance the mixing auger to within one foot of the EPDM liner.

4. Location control during solidification: Operations may be facilitated by using GPS technology to provide accurate, real-time positioning and recording of the mixer head assembly. This type of system can measure the precise 3D position of the tip of the auger assembly and provide the operator with a screen display of the auger relative to the pond liner location.

5. Sequencing: First solidify a ring around the outer edge of a pond (full sideslope width) and allow material to cure. Then complete subsequent rings working towards the center of the pond.