December 5, 2008

MEMORANDUM TO: Rebecca Tadesse, Branch Chief
Materials Decommissioning Branch
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

FROM: John J. Hayes, Senior Project Manager **/RA/**
Materials Decommissioning Branch
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

SUBJECT: NOVEMBER 20, 2008 PUBLIC MEETING SUMMARY

On November 20, 2008, a public meeting was held at the Shieldalloy Metallurgical Corporation's Office in Newfield, NJ. The meeting was held between the U.S. Nuclear Regulatory Commission's (NRC's) Shieldalloy Decommissioning Plan Review Team and representatives of the Shieldalloy Metallurgical Corporation (SMC) and its contractors. The purpose of the meeting was to discuss the draft Requests for Additional Information (RAIs) associated with the NRC's review of the Cost-Benefit aspects of the NRC's Environmental Report and the As Low As Reasonably Achievable issue associated with the Decommissioning Plan. Also discussed was one question involving mixed waste being present at the Shieldalloy site.

The meeting focused on the determination of whether the information being requested by the NRC was clear to SMC or whether additional clarification needed to be provided prior to submitting the RAIs to SMC in final form. The discussion also provided the opportunity for SMC to identify if some of the information being requested by the staff was contained in existing Shieldalloy documents provided to the staff in support of the Decommissioning Plan review. As a result of the meeting, some of the RAIs will be revised and re-stated. Others are being assessed for possible deletion. At the conclusion of the meeting, members of the public were provided the opportunity to make statements in accordance with the guidelines associated with a NRC Category 1 meeting.

Enclosure 1 is the Attendee List (ML083260582). The agenda for the meeting is available at ML083120310. Enclosure 2 is the draft RAIs which were discussed during the meeting

The meeting adjourned at 5:00 PM

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CONTACT: John J. Hayes, FSME/DWMEP
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Enclosures:
1. Attendee List
2. RAI for Discussion
3. Supplemental RAI

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The meeting focused on the determination of whether the information being requested by the NRC was clear to SMC or whether additional clarification needed to be provided prior to submitting the RAIs to SMC in final form. The discussion also provided the opportunity for SMC to identify if some of the information being requested by the staff was contained in existing Shieldalloy documents provided to the staff in support of the Decommissioning Plan review. As a result of the meeting, some of the RAIs will be revised and re-stated. Others are being assessed for possible deletion. At the conclusion of the meeting, members of the public were provided the opportunity to make statements in accordance with the guidelines associated with a NRC Category 1 meeting.

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The meeting adjourned at 5:00 PM.

Enclosures:
1. Attendee List
2. RAI for Discussion
3. Supplemental RAI

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ML083260593

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1. For ALARA Evaluation for Restricted Use, Provide Discussion of Need for Radon Mitigation Techniques as Part of Institutional Controls

Basis:
Chapter 5 (with associated Tables) of the DP indicates that SMC eliminated the radon pathway from all exposure scenarios evaluated. Justification is provided in Section 5.3.2.1 and Table 17.4 of the DP (Rev. 1). In Section 5.3.2.1, SMC states that, in the Statements of Consideration (SOC) for the License Termination Rule (LTR), the NRC staff documented concurrence with eliminating the radon pathway for outdoor exposure scenarios. The SOC was published in the *Federal Register* (FR) (at 62FR39057, dated July 21, 1997). SMC quotes part of a passage from Section F.6.3 of the SOC, which discusses comments on the proposed rule and how radon is to be addressed under the final rule. However, what SMC quoted neglected key parts of the Section F.6.3 discussion in the SOC. The following is the complete conclusion of Section F.6.3 of the SOC, starting with the last sentence SMC had quoted (emphasis added below by NRC staff).

> Therefore, in implementing the final rule, licensees will not be expected to demonstrate that radon from licensed activities is indistinguishable from background on a site-specific basis. Instead this may be considered to have been demonstrated on a generic basis when radium, the principal precursor to radon, meets the requirements <u>for unrestricted release</u>, without including doses from the radon pathway.
>
> In some instances it may not be reasonable to achieve levels of residual concentrations of radon precursors within the limit for unrestricted use. As discussed in Section IV.B for cases such as these, restricting site use by use of institutional controls could be considered by a licensee as a means to limit the doses from precursors by limiting access to the site. Under the <u>restricted use</u> provisions of the rule, these doses are required to be further reduced based on ALARA principles. In developing guidance on the application of ALARA in such cases, the Commission will also consider the practicality of requiring <u>as part of controls</u> the use of radon mitigation techniques in existing or future structures.

The NRC staff disagrees with SMC's statement that NRC had concurred on elimination of the radon pathway for outdoor scenarios. The point made in the SOC was that the radon pathway did not need to be addressed for sites otherwise meeting the *unrestricted use* criterion (of 10 CFR 20.1402). SMC has proposed license termination for the Shieldalloy site under both unrestricted and *restricted use* provisions. The NRC staff has concluded that SMC's understanding of the SOC regarding the radon pathway for the SMC site is incorrect.

However, based on the SOC discussed above, the NRC staff believes that the radon pathway *does not* need to be included *in the dose assessment* for the SMC facility. Instead, the NRC staff believes that the radon pathway only needs to be addressed as part of the ALARA evaluation. Specifically, the NRC staff believes that the ALARA evaluation for compliance with §20.1403(a) (restricted use) should consider the practicality of radon mitigation techniques in structures as part of the institutional controls proposed for the site.

Path Forward:
In its ALARA evaluation for compliance with §20.1403(a), SMC should include consideration of the need for and practicality of radon mitigation techniques in structures as part of the institutional controls proposed for the site.

2. Provide Details of the Determination of Dose from Current Radon Releases

Basis:
In the ALARA analysis of the DP (Rev. 1), Section 7.2.1.2 describes estimates of current doses to members of the public around the SMC site. This section states that a nominal dose rate from radon emanation from baghouse dust is approximately 8.2×10^{-3} microR per hour. The DP does not describe how this value was determined (though there is reference to a quarterly monitoring report). The NRC staff notes that in replying to the Commission on July 3, 2008, regarding an ASLB memorandum, SMC described a recent dose assessment for doses to members of the public. In this latter case, SMC cited a report by integrated Environmental Management, Inc, "Prospective Dose Assessment for members of the Public," dated May 21, 2008.

The NRC staff has two concerns about the dose from radon stated in the DP. First, the DP text indicated that this dose was from radon emissions from baghouse dust. The concentrations of radium (Ra-226 and Ra-228) in some of the slag materials appear to be significantly higher than in the baghouse dust. During visits to the SMC site this summer, NRC staff observed that some of the slag is physically degrading, which may be an indication that radon produced in the slag may readily escape the slag matrix and emanate into the atmosphere. Second, the dose rate (technically, an exposure rate was indicated) stated in the DP seems to NRC staff to be very low (relative to the Ra-226 concentrations in the SMC materials, and based on previous experiences with uranium mill tailings), and the NRC staff is concerned that the value may be unrealistically low. Without details of the evaluation, the NRC staff cannot adequately assess the value.

Path Forward:
Provide to the NRC staff the cited reports and/or the reports which describe how the radon dose estimates were determined. Provide the calculations if they are not in the reports. Provide the justification for basing the limiting dose on the baghouse dust material.

3. Provide Justification for Criteria for Release of Materials and Equipment

Basis:
In July 5, 2007 NRC letter, RAI 59 requested information about SMC's proposed criteria for releasing volumetrically contaminated materials and equipment because the Shieldalloy DP included criteria that were applicable only to surface-contaminated materials and equipment. In SMC's November 9, 2007 response, they proposed to use criteria from ANS/HPS N13.12-1999, "Surface and Volume Radioactivity Standards for Clearance," for surface-contaminated and for volumetrically contaminated materials and equipment. The NRC staff has not endorsed use of this ANSI/HPS standard for clearance of materials and equipment.

The criteria proposed by SMC in Section 14.2.1 of the DP (Rev. 1) were acceptable to the NRC staff for application to *surface-contaminated* materials and equipment. The NRC staff's current guidance on criteria for release of contaminated materials and

equipment is contained in Section 15.11 of NUREG-1757, "Consolidated Decommissioning Guidance," Volume 1, Revision 2. The NRC staff understands, from phone conference calls with SMC, that concrete may be the material for which the volumetrically contaminated criteria may need to apply. NUREG-1640 provides descriptions of dose assessments for unrestricted release of concrete. SMC might wish to review the information in NUREG-1640 as a possible resource for developing release criteria for volumetrically contaminated materials consistent with the guidance of NUREG-1757.

Path Forward:
Provide justification for the criteria to be used for release of surface-contaminated and volumetrically contaminated materials and equipment. If SMC proposes use of the criteria in ANSI/HPS N13.12 or some other criteria (not previously approved), SMC should provide independent justification, including a dose assessment, following the guidance in Section 15.11 of NUREG-1757, Vol.1, Rev. 2.

4. Provide ALARA Evaluation for Unrestricted-Use Portion of the Site

Basis:
The proposed approach to decommission the SMC site includes cleanup of a portion of the site for release from the license for unrestricted use. The LTR criteria for unrestricted use termination, in 10 CFR 20.1402, includes that the residual radioactivity has been reduced to levels that are ALARA. Chapter 7 of the DP discusses the ALARA evaluation that SMC performed. The discussion in Chapter 7 focuses on the evaluation for the proposed restricted use portion of the site and does not include discussion of an ALARA evaluation for the unrestricted portion of the site.

Path Forward:
Provide an ALARA evaluation for the unrestricted-use portion of the proposed site decommissioning, to show how SMC plans to comply with the ALARA provision of §20.1402. NRC staff guidance on ALARA for license termination criteria is provided in Chapter 6 and Appendix N of NUREG-1757, Vol. 2, Rev. 1.

5. For the ALARA Evaluation for the Eligibility Criteria of 10 CFR 20.1403(a): Provide Additional Quantification or Details on Regulatory Costs

Basis:
The DP (Rev. 1), in Section 7.3.7, provides a brief discussion of regulatory costs that relate to the ALARA evaluation for the restricted use requirements of 10 CFR 20.1403(a). However, SMC has not quantified any of the regulatory costs. The NRC staff believes that Information should be available with which SMC could estimate these regulatory costs. Because the regulatory costs can be significant, and could vary considerably between the decommissioning options being evaluated, quantifying these costs could be important to the overall ALARA evaluation.

Path Forward:
Provide additional quantification of the regulatory costs for the different decommissioning options being evaluated as part of the ALARA evaluation for the eligibility criteria of §20.1403(a).

6. Justification for Excluding Radon Pathway from Dose Assessment is Technically Incorrect

Basis:
In Table 17.4 of the DP, SMC provides an argument for excluding the radon pathway (in addition to the argument based on the Statements of Consideration for the LTR, discussed in a previous RAI 1 above). In the Table, it was stated: "In addition, the source term found is not a significant producer of radon due to the relatively long half-life of the thorium isotopes found in the slag." The fact that the source term includes long half-life isotopes does *not* preclude radon from being produced or being a contributor to dose. In fact, the long half life of the thorium isotopes (along with the relatively short half life of the radon isotopes) means that radon will be produced for a long time. Therefore, the argument proposed in Table 17.4 is not justified.

Path Forward:
In its revision to the DP, SMC should correct this technical inaccuracy. See also the related RAI 1 above regarding ALARA and the radon pathway.

Supplemental Request for Additional Information
Shieldalloy Metallurgical Corporation
Docket No. 04007102

The U.S. Nuclear Regulatory Commission (NRC) staff is conducting its environmental review of Shieldalloy Metallurgical Corporation's (SMC's) proposed plan for decommissioning its Newfield, New Jersey site in support of preparing the Environmental Impact Statement (EIS). In October 2005, SMC submitted a Decommissioning Plan (DP) (Rev 1) and a draft Environmental Report (ER). On June 30, 2006, a supplemental DP (Rev 1a) was submitted. SMC also intends to submit an additional supplemental DP (Rev 1b) in April or May 2009. Based on NRC staff review of these reports, previously submitted information and anticipated information to be provided in DP (Rev 1b), the NRC staff has developed a supplemental request for additional information to support its evaluation of the potential environmental impacts of SMC's proposed DP and alternatives.

Cost Estimate RAIs Based on Shieldalloy Cost Estimates Provided in Decommissioning Plan, Rev1a and Rev 1b Interim

Action needed to complete the staff's review: Shieldalloy needs to update the cost estimates and provide the detailed cost bases and applicable references for their cost estimates in Tables 17.14, 17.15, 17.16 in the Decommissioning Plan, Rev 1a, and specifically address the comments/questions in the comment tables.

Basis or bases why the information is needed: The major costs and benefits of each alternative must be considered in the EIS in accordance with 10 CFR 51.71. The cost benefit analysis provides input to determine the relative merits of various alternatives. The comments on the LTC, LT, and LC alternative cost estimates need to be provided in order to fully and objectively evaluate the costing portion of these alternatives. An evaluation of the cost estimates is critical as they directly impact the cost-benefit analysis.

Requirement/criteria for the information: Shieldalloy needs to provide supporting documentation and references where applicable.

Comments on Table 17.14 – Cost Estimate for the LTC (Long Term Control) Alternative

1. Please provide references for all line item costs.
2. It is our understanding that Area/Piles #10 and #11 would be included in this alternative. However, the quantity estimates do not include these piles. Area/Pile #11 is located outside of the Storage Yard on Figure 1-6 of the ER (SMC 2005), however, it is not listed on Table 1-1 of the same report. Based on review of DP Rev 1b, the Design Drawings do not discuss either Area/Piles #10 or #11. Please clarify.
3. Explain how the area for dust suppression was quantified. The quantity (28,000 SY) of dust suppression on haul roads seems large if just haul roads are being considered. Does the dust suppression line item apply to material within the restricted area as well; not just haul roads? This is alluded to in the DP Rev 1, pg 97, 2nd para. Additionally, describe the equipment/materials that are proposed to suppress the dust? (ER p 1-8).

4. Are the haul roads being referred to above the same as those referred to on page 1-8 of the ER and shown on Figure 1-5 of the same report (highlighted in green and perpendicular to Weymouth Road)? Does this road still exist after portions of the road were excavated prior to 1998 (ER, pg 1-8)? If the haul roads don't exist, please add construction of the haul roads to the estimate. Suggest identifying the haul roads on the LTC alternative figure.
5. Please explain why radiological and air monitoring are proposed for only 13 weeks if construction is to occur over 7 months.
6. Please provide the cost basis for the Radiological and Air Monitoring line item. Include the number of monitors and their unit rate. The unit cost component for labor allows for one person for 3 hrs/day @$100/hr or 2 hrs/day @ $150/hr – are the remaining hours per day for this person included in another line item (a line item for health and safety is not included)? Do the labor hours include the on-site analysis of air filter samples and has the counting equipment been included in the cost estimate, or will the samples be sent to an off-site lab and have analytical costs been included?
7. Please provide the cost basis for the Additional Soil Characterization line item.
8. Please explain the rationale for the three different unit costs for grading and why #1 is so much higher than the others: 1) Rough Grading of Coarse Slag @ $6.74/SY, 2) Grading of Subgrade Cap Materials @ $0.26/SY, 3) Grading @ $0.36/SY (in Table 17.15).
9. Please provide the basis for the materials, labor, and equipment costs for the Final Status Survey (FSS). The ER states that an FSS will be performed for the entire plant, which would include building and soil surveys. Were the analytical costs included in this estimate? Explain why the FSS is the same cost for the LTC alternative and the LT alternative since the footprint of the consolidated materials pile would not be included in the FSS for the LTC alternative.
10. Although the text indicates fencing is included, it is not included as a line item. Please add the cost of fencing as a line item. [DP Rev 1, pg 150, last bullet]
11. Explain why the line item Fine Grade, Seed and Mulch is referred to in a volumetric unit (CY) when typically it is estimated in SY or acres. The value given,18,300 CY, is three times the volume of topsoil to be used in areas outside the consolidated materials pile, which seems unreasonable unless Fine Grade, Seed, and Mulch are to be applied to an area larger than the topsoil area. Define the area to be covered by the seed and mulch.
12. Please provide a line item for preparation of a final topo survey once the engineered barrier is complete (to be used for as-builts).
13. The 5% markup for Admin Costs ($90.8K) is assumed to include a secretary in the field or in the office. Assumed costs for a secretary of loaded $40/hr*8hr/day*5days/wk*4wk/mo*7mo = $45K (vs $90.8K in Table 17.14). Is it anticipated that the remaining $45K will be enough to support additional subcontracting, invoicing, timekeeping, expense reporting, etc. services necessary for this project?
14. The 10% markup for Project Management During Construction ($181.6K) appears to be low. For this project it would be expected that a field project manager and a field engineer would be needed, plus corporate project management. Please provide a breakdown of the elements of this cost, including basic wages and benefits, overhead, and contractor profit (sufficient to allow an independent third-party to carry out the decommissioning [NUREG 1757, Vol 3, Section A.3.1.2]).
15. For permits and legal documentation, explain what is included in the estimated cost of ~$200K.

16. Explain what is included in the Engineering Design Costs of $200K. If it includes Work Plans, H&S Plans, O&M Plans, Soil Management Plans, continuous scheduling updates, etc., the cost appears to be low.
17. Section 9.3.2.1 of the DP, Rev 1, indicates that radiological, industrial hygiene and industrial safety support will be provided, but there are no line item costs for health and safety. Please provide these costs.
18. Is groundwater monitoring included in the annual O&M costs? If not, please estimate and add a line item for groundwater monitoring.
19. Explain how overhead and profit (O&P) was applied to each line item. Most items have ~25% O&P added to the base costs. In other cases, it is 17% (DP Rev 1a, Table 17.14, Sediment and Erosion Controls) or 31% (DP Rev 1a, Table 17.14, Drainage Improvements) or other. The text states a universal 25% O&P factor applied to most unit costs, with certain activities requiring higher health and safety precautions thus labor and equipment productivity were reduced by 45% and 25% respectively (DP Rev1, pg 150, 4th bullet). Explain how the reduced productivity rates were incorporated into the unit costs. O&P factors >25% are reasonable; O&P factors <25% are not typical.
20. Explain the rationale for the markup percentage chosen for each estimate, as they vary between estimates. For example, Engineering Design costs are 10% of the construction costs in Table 17.14 (LTC alternative); whereas it is 2% in Table 17.15 (LT alternative). A similar situation exists for other markups.
21. Clarify CY line items to be loose (LCY) or bank (BCY) as this would add a level of accuracy to the estimate.
22. Provide the reference for the 1996 mobe and demobe costs.
23. Indicate whether all non labor costs have been addressed as specified in NUREG 1757 .
24. Indicate if and where non-labor costs (e.g. PPE, shipping, taxes, insurance [NUREG 1757, Vol 3, Appendix A, pg A-28]) and field support items such as field trailers/portable toilets/computers/ electricity/water etc. have been included in the estimate. If they have not been included, add line items for these costs.

Comments on Table 17.15 – Cost Estimate for the LT (License Termination) Alternative

1. It is our understanding that Area/Piles #10 and #11 would be included in this alternative. However, the quantity estimates do not include these piles.
2. Explain why the mobe cost is the same in this alternative as in the LTC alternative. Explain why demobe is more expensive than mobe in this alternative.
3. Explain the logistics of loading the rail cars and transporting off site. For example, is there enough track to hold the number of railcars to be loaded at any given time or should costs for additional track be added? Since the track dead ends at the site and there is one way in and one way out for the cars, how does SMC/EnergySolutions plan to logistically load the railcars and transport off-site? Is there enough room for the 10 railcars? Is a car puller to be utilized or will the switcher be used to maneuver railcars?
4. For railway transport, indicate if and where the costs for loading scales have been included in the cost.
5. Based on the quantities given, there are 3,000 crossties proposed for 2,400LF of track. Therefore, each crosstie is to be placed every ~9 inches. Based on RS Means (2008, Assembly R347216-10), timber crossties are typically placed every 22 inches on center. Please explain.

6. Clarify whether the Railcar Switcher unit cost includes labor.
7. For the Radiological and Air Monitoring item, explain why the costs are different for LT and LTC alternatives and explain the basis for the cost. Include the number of monitors and their unit rate. The unit cost component for labor allows for one person for 3 hrs/day @$100/hr or 2 hrs/day @ $150/hr – are the remaining hours per day for this person included in another line item (a line item for health and safety has not been included in the estimate)? Do the labor hours include the on-site analysis of air filter samples and has the counting equipment been included in the cost estimate, or will the samples be sent to an off-site lab and have analytical costs been included?
8. Provide the costs to be added to construct the staging area as it is currently proposed in a grassy area, e.g., include poly, concrete pad, gravel base, gravel entrance/exit, etc. If the paved areas immediately adjacent (to the west) will be used as well, include costs for preparation of that area (there are cracks in the existing pavement). Also, describe the plan and costs for secondary containment and storm water management measures in the staging area.
9. Explain why mulch is not included in site restoration as was done for the LTC alternative.
10. Please include costs for a survey crew for railroad installation.
11. Drainage improvements for the LT alternative are included in Table 17.15 at the same cost as presented in Table 17.14, however, drainage improvements are not described in the text for the LT alternative.
12. For permits and legal documentation, explain what is included in the estimated cost of $475K.
13. Explain what is included in the Engineering Design Costs of $200K. If it includes Work Plans, H&S Plans, O&M Plans, Soil Management Plans, continuous scheduling updates, etc., the cost appears to be low.
14. Section 9.3.2.1 of the DP, Rev 1, indicates that radiological, industrial hygiene, and industrial safety support will be provided, but there are no line item costs for health and safety. Please provide these costs.
15. Explain how overhead and profit (O&P) was applied to each line item. Most items have ~25% O&P added to the base costs. In other cases, it is 17% (DP Rev 1a, Table 17.14, Sediment and Erosion Controls) or 31% (DP Rev 1a, Table 17.14, Drainage Improvements) or other. The text states a universal 25% O&P factor applied to most unit costs, with certain activities requiring higher health and safety precautions thus labor and equipment productivity were reduced by 45% and 25% respectively (DP Rev1, pg 150, 4th bullet). Explain how the reduced productivity rates were incorporated into the unit costs. O&P factors >25% are reasonable; O&P factors <25% are not typical.
16. Explain the rationale for the markup percentage chosen for each estimate, as they vary between estimates. For example, Engineering Design costs are 10% of the construction costs in Table 17.14 (LTC alternative); whereas they are 2% in Table 17.15 (LT alternative). A similar situation exists for other markups.
17. Clarify CY line items to be loose (LCY) or bank (BCY) as this would add a level of accuracy to the estimate.
18. Indicate if and where non-labor costs (e.g. PPE, shipping, taxes, insurance [NUREG 1757, Vol 3, Appendix A, pg A-28]) and field support items such as field trailers/portable toilets/computers/electricity/water etc. have been included in the estimate. If they have not been included, add line items for these costs.

Mixed Waste RAI:

Has mixed waste ever been present on the SMC site? If mixed waste is still onsite, how will it be dispositioned? If mixed waste was formerly on the SMC site, how was it dispositioned? Has SMC sampled to determine the occurrence of mixed waste on the surface and in the subsurface? If no sampling has been performed, how will SMC demonstrate that mixed waste are not present? Is there chemically contaminated equipment being considered for consolidation under the engineered barrier thus creating the potential for mixed waste? Demonstrate through either process knowledge, historic operating practices, or from sample analysis whether mixed waste is present onsite. This discussion should address the likelihood of mixed waste in the storage yard as well as in underground structures and systems such as septic systems, drains, pipes, and discharge lines.