

July 3, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of)
)
SHIELDALLOY METALLURGICAL CORP.)
)
(Licensing Amendment Request for)
Decommissioning of the)
Newfield, New Jersey Facility))

Docket No. 40-7102-MLA

NRC STAFF'S RESPONSE TO LBP-08-08

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July 3, 2008

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INTRODUCTION

The NRC Staff herein responds to the Atomic Safety and Licensing Board's "Memorandum (Bringing Matter of Concern to Commission's Attention)," LBP-08-08, 67 NRC ___ (June 2, 2008) (slip op.).¹ In its Memorandum, the Board expressed concern about the pace of decommissioning Shieldalloy's facility in Newfield, New Jersey and another facility regulated by the NRC, the United States Army's Jefferson Proving Ground (JPG) site in Madison, Indiana. The Board also expressed concern that, while the Staff is engaged in its technical review of Shieldalloy's proposed decommissioning plan (DP), none of the protective measures contemplated by the DP are in place. In this brief, the Staff will summarize activities relevant to decommissioning Shieldalloy's Newfield site and describe the status of its technical review. The Staff will also address what protective measures are presently in place at the Newfield site and whether certain additional measures could reasonably be implemented prior to the DP's approval or rejection. Finally, the Staff will briefly address the Board's comments regarding JPG.

¹ On June 10 and 12, 2008, Shieldalloy and, subsequently, the NRC Staff filed unopposed motions seeking leave to respond to LBP-08-08. On June 18, 2008, the Secretary granted those motions and provided all parties the opportunity to respond to the Board's Memorandum.

BACKGROUND

In June 2006 Shieldalloy submitted a DP for its Newfield site.² This DP, titled "Rev. 1a," seeks to amend the license for the Newfield site to a possession-only license for long-term control (POL/LTC) of radioactive material at the site.³ If Rev. 1a is approved, the majority of the Newfield site will be released under the unrestricted use provisions of 10 C.F.R. § 20.1402, while an eight-acre portion of the site containing slag and baghouse dust will be decommissioned under the restricted release provisions of 10 C.F.R. § 20.1403. The slag and baghouse dust at the Newfield site was generated during Shieldalloy's operations between 1955 and 1998, when Shieldalloy processed pyrochlore, a concentrated niobium ore that is defined as source material under 10 C.F.R. § 40.4 because it contains greater than 0.05 percent natural uranium and thorium.

The Staff determined that Rev. 1a met the acceptance criteria for technical review⁴ and, in November 2006, placed notice in the Federal Register of the opportunity to request a hearing on the DP.⁵ Seven hearing requests were received. On March 28, 2007, the Board issued a Memorandum and Order ruling on those hearing requests.⁶ The Board granted the hearing request of the New Jersey Department of Environmental Protection (NJDEP), while denying the hearing requests of the six other petitioners. In granting NJDEP's hearing request, the Board

² "Follow-Up to the March 9, 2006 Meeting and Response to USNRC Letter of January 26, 2006" (ADAMS Accession No. ML061980092) (June 30, 2006).

³ Rev. 1a incorporates portions of Rev. 1 to the DP, which Shieldalloy submitted in October 2005. Rev. 1 was not accepted for technical review.

⁴ "Acceptance for Technical Review of the Decommissioning Plan for the Newfield Facility" (ADAMS Accession No. ML062580126) (October 18, 2006).

⁵ Notice of Consideration of Amendment Request for Shieldalloy Metallurgical Corporation, Newfield, New Jersey and Opportunity to Request a Hearing, 71 Fed. Reg. 66,986 (Nov. 17, 2006) (ADAMS Accession No. ML063100282).

⁶ *Shieldalloy Metallurgical Corp.*, Memorandum and Order (Ruling on Hearing Requests), LBP-07-05, 65 NRC 341 (March 28, 2007).

ruled on only one of NJDEP's seventeen proposed contentions. The Board admitted Contention 5, which alleges that the DP obtains inaccurate dose modeling results by ignoring the likely scenario of groundwater contamination and other reasonable assumptions. The Board found that NJDEP provided adequate support for its argument that the dose modeling in the DP is inadequate to determine the potential long-term impact of leaving slag and baghouse dust at the Newfield Facility.⁷

Although the Board ruled on Contention 5, the Board also concluded that it made sense to defer ruling on NJDEP's remaining contentions and withhold all further action in this proceeding pending the Staff's completion of its safety and environmental review. The Board deferred ruling on NJDEP's remaining contentions because, in its view, "[t]here is no aspect of [the DP] that is set in stone and it is scarcely inconceivable that, whether as the result of the Staff's review or independent of it, the DP might undergo significant revision that would have a decided impact upon the New Jersey contentions now on the table."⁸ The Board explained that, because of this potential for significant revision, "there is at least a considerable measure of uncertainty as to whether, at the end of the day, the decommissioning of the Licensee's site will take the form that is contemplated by the DP now in hand."⁹

On May 8, 2007, the Board directed the Staff to file bi-monthly status reports on its technical review of the DP.¹⁰ The status reports are to contain "(1) a brief statement regarding the then status of the technical review; and (2) the Staff's then best estimate as to the completion date of the review and the release of the documents associated with it."¹¹ The

⁷ *Id.* at 357–58.

⁸ *Id.* at 360.

⁹ *Id.* at 361.

¹⁰ Memorandum and Order (Directing the Filing of Status Reports) (May 8, 2007) (unpublished).

¹¹ *Id.* at 2.

Board explained that it was directing the Staff to file status reports because “the effective management of the large number of cases that are likely to be before licensing boards over the course of the next several years makes it imperative that, to the maximum extent possible, it be known during what period particular proceedings will require the expenditure of considerable time on the part of the judges assigned to them.”¹²

The Staff filed its First Status Report on June 8, 2007, providing an estimate of October 2008 for release of the final Environmental Impact Statement (EIS).¹³ The estimated completion date for the final EIS was revised to November 2008 in the Staff’s Second Status Report to take into account a slight delay in transmitting requests for additional information (RAIs) to Shieldalloy.¹⁴ That estimate was revised to May 2009 in the Fourth Status Report after Shieldalloy informed the Staff that, to provide a full response to the RAIs, it intended to submit a revision to the DP, Rev. 1b, in May 2008.¹⁵ That estimate was again revised in the Sixth Status Report, to August 2009, after Shieldalloy informed the Staff that it would be conducting additional leachability tests to support its RAI responses.¹⁶

On April 28, 2008, after the Staff submitted its Sixth Status Report, the Board held a prehearing conference with the parties to obtain information on the protective measures in place at the Newfield site and to inquire into the substance of Rev. 1b, which the Board noted would apparently be responsible for a delay in the completion of the Staff’s technical review.¹⁷ During the prehearing conference, counsel for Shieldalloy described certain protective measures

¹² *Id.* at 1–2.

¹³ “NRC Staff’s First Status Report” (June 8, 2007) (ADAMS Accession No. 071630036).

¹⁴ “NRC Staff’s Second Status Report” (August 8, 2007) (ADAMS Accession No. 072200615).

¹⁵ “NRC Staff’s Fourth Status Report” (December 7, 2007) (ADAMS Accession No. 073450545).

¹⁶ “NRC Staff’s Sixth Status Report” (April 11, 2008) (ADAMS Accession No. 081290059).

¹⁷ “Transcript of Shieldalloy Metallurgical Corp. Prehearing Conference” (April 28, 2008) (ADAMS Accession No. 081260329).

presently in place at the Newfield site.¹⁸ Counsel for the Staff, on the other hand, explained why the additional leachability tests contemplated by Shieldalloy required a revision to the estimated completion date for the final EIS.¹⁹ Also during the prehearing conference, the Board directed Shieldalloy and the NRC Staff to submit memoranda summarizing interactions relevant to decommissioning the Newfield facility, explaining that it wanted a “complete picture” of interactions from 1998 to the present.²⁰ Shieldalloy and the Staff submitted the requested memoranda on May 8, 2008, and NJDEP filed a reply to those memoranda on May 15, 2008.²¹

On June 2, 2008, the Board issued its Memorandum (Bringing Matter of Concern to Commission’s Attention). The Board’s Memorandum includes several statements the Staff will address below. In particular, the Staff wishes to address the Board’s statements that (1) the material accumulated at the Newfield site is “nothing more than a slag pile”;²² (2) the decommissioning of the Newfield site reflects “a more than casual attitude on the Staff’s part with regard to the decommissioning of sites on which radioactive materials remain as a potential threat to public health and safety and to the environment”;²³ and (3) “not even a portion of the

¹⁸ *Id.* at 18–21.

¹⁹ *Id.* at 41.

²⁰ *Id.* at 48.

²¹ “Shieldalloy’s Submittal Regarding Chronology of Events Related to the Decommissioning of the Newfield, NJ Facility” (May 8, 2008); “NRC Staff’s Summary of Actions Relevant to Decommissioning Shieldalloy’s Newfield Facility” (May 8, 2008); “New Jersey Department of Environmental Protection’s Reply to the NRC Staff and Shieldalloy Submissions Regarding the Chronology of Decommissioning Events” (May 15, 2008).

²² LBP-08-08, 67 NRC __ (slip op. at 13).

²³ *Id.* (slip op. at 14).

protective measures contemplated by the challenged plan are in place” at the Newfield site.²⁴

The Staff will also address similar statements made by the Board with respect to JPG.²⁵

DISCUSSION

The concerns expressed by the Board include the pace of decommissioning Shieldalloy’s Newfield site and whether adequate protective measures are in place pending completion of the Staff’s technical review. The Staff shares these concerns. Since Shieldalloy ceased production at its facility in 1998, the Staff has worked diligently to see that the Newfield site will be decommissioned as soon as possible. In fact, numerous areas of the Newfield site have already been decommissioned.²⁶ The DP presently on review is concerned primarily with the slag and baghouse dust accumulated on an eight-acre portion of the Newfield site. The length of time involved in decommissioning this portion of the site does not reflect inattention on the part of the Staff, but is due to exceptional circumstances that the Staff will address in more detail below.

Like the Board, the Staff also considers highly important the health and safety of people living in the vicinity of the Newfield site. The Staff continues to monitor and inspect the site, and the Staff’s reports of recent inspections are publicly available through the NRC’s Agencywide Documents Access and Management System (ADAMS). These inspections have not revealed any current threat to public health or safety associated with the Newfield site.

The Staff would note that Shieldalloy already has in place at the Newfield site certain protective measures, including access control procedures and radiation monitoring, that are elements of its DP. The Staff has considered whether additional measures contemplated by the

²⁴ *Id.* (slip op. at 1, 7).

²⁵ *Id.* (slip op. at 13–14).

²⁶ See "Decommissioning Plan for Newfield Facility, Volume I" (ADAMS Accession No. ML053190220) (October 21, 2005) at 7–10 (identifying portions of the Newfield site that have been decommissioned).

DP might be implemented prior to a final Staff decision on the DP's technical sufficiency. The Staff's view is that at the present time there is no sufficient basis for ordering Shieldalloy to put in place the primary physical protective measure contemplated by the DP, an engineered barrier that would cover the slag and baghouse dust at the Newfield site. Further, the Staff would emphasize that ordering an interim protective measure such as the engineered barrier could greatly complicate decommissioning the Newfield site in that it might cause radiological contamination of additional material and reduce funds available for decommissioning.

I. Decommissioning the Newfield Site

In its May 8, 2008 filing before the Board, the Staff summarized its interactions with Shieldalloy regarding the decommissioning of the Newfield site. As explained in the Staff's filing, and as further set forth in Shieldalloy's filing and attached Timeline of Events, since 1998 the Staff and Shieldalloy have had extensive interactions regarding the decommissioning of the Newfield site. These interactions have continued as the Staff conducts its technical review of the DP. The Staff is also considering extensive comments submitted by both NJDEP and the United States Environmental Protection Agency (Region 2) as it reviews the DP.²⁷ The Board's suggestion that the DP review in this particular case reflects a "more than casual attitude on the Staff's part" cannot be reconciled with the documentary record relevant to this proceeding, which was put before the Board in the Staff's and Shieldalloy's May 8, 2008 filings.

The length of time involved in decommissioning the Newfield site is due at least in part to the difficulty of finding a feasible approach for decommissioning the site. As explained in the Staff's May 8, 2008 Memorandum to the Board, Shieldalloy submitted a Conceptual DP for the Newfield site as early as 1993. This was followed by a Revised Conceptual DP and,

²⁷ "Comment of Donna L. Gaffigan on Behalf of New Jersey Department of Environmental Protection Re: Shieldalloy Metallurgical Corporation Decommissioning Plan, Rev. 1a" (ADAMS Accession No. ML0709201581) (March 16, 2007); "U.S. EPA Comments on Shieldalloy Metallurgical Corporation's Decommissioning Plan for Newfield, NJ Site" (ADAMS Accession No. ML072820048) (September 26, 2007).

subsequently, a formal DP (Rev. 0), which Shieldalloy submitted in 2002. The Staff rejected Rev. 0, in part because Shieldalloy had not sufficiently demonstrated the capability or willingness of any local or state government entity to provide the long-term institutional controls required by 10 C.F.R. § 20.1403. The Staff thereafter sought to address the difficulty Shieldalloy and certain other licensees were having in arranging for the requisite institutional controls. The Staff developed and recommended to the Commission the POL/LTC concept, under which the NRC itself will provide the institutional controls required by 10 C.F.R. § 20.1403 if the licensee demonstrates it cannot arrange for other acceptable institutional controls. The Staff included guidance for use of a POL/LTC as part of the 2006 revisions to NUREG-1757, "Consolidated Decommissioning Guidance," and Shieldalloy relied on this guidance in submitting Rev. 1a, which is based on the POL/LTC concept.

Below, the Staff will summarize its interactions with Shieldalloy related to decommissioning. The Staff will also describe the status of its technical review of the DP and explain why, in several of its status reports to the Board, the Staff had to revise the estimated release dates for documents associated with its review. The Staff will then explain what protective measures are presently in place at the Newfield site and address whether the Staff might order Shieldalloy to implement certain additional measures pending a Staff decision on whether to accept or reject the DP.

A. Decommissioning Efforts Prior to the Submission of Rev. 1a

After the prehearing conference on April 28, 2008, the parties submitted memoranda to the Board addressing decommissioning activities at the Newfield site since 1998, the year in which Shieldalloy stopped processing ore containing source material. The Staff respectfully refers the Commission to those three filings for detailed summaries of decommissioning

activities involving the Newfield site.²⁸ Below, the Staff will mention only the most significant interactions relevant to decommissioning the site.

April 1993 Shieldalloy submits a Conceptual DP for the Newfield site. The Conceptual DP assumes that releasing the site for unrestricted use in accordance with NRC requirements cannot reasonably be achieved and states that Shieldalloy intends to apply for an exemption from those requirements.

December 1995 Shieldalloy submits a Revised Conceptual DP, in which it states that there is a strong potential the slag and baghouse dust at the Newfield site can be sold profitably for use as additives in various industrial processes and that, as a result, "release of the Newfield site for unrestricted use now appears achievable[.]"

September 1995 Shieldalloy files an application to renew its license, stating that it intends to continue using the Newfield facility to produce specialty alloys, slag fluidizers, and other products.

September 1997 Staff releases its environmental assessment for Shieldalloy's license renewal application and issues a finding of no significant impact.

October 1997 Staff renews License SMB-743 for a five-year period, with an expiration date of October 20, 2002.

April 1998 (approx.) After encountering difficulties obtaining an adequate supply of pyrochlore, Shieldalloy ceases processing this ore. Shieldalloy attempts to find a market for the slag and baghouse dust at the Newfield site. These efforts continue into 1999. However, Shieldalloy is unsuccessful in arranging for the sale of significant quantities of slag or baghouse dust.

May 2000 Shieldalloy requests that it be allowed to postpone the initiation of its decommissioning process for one year in order to further explore business opportunities involving source material before planning for and proceeding with decommissioning. Shieldalloy specifically requests a deferral of both the notification and plan submission requirements in 10 C.F.R. § 40.42.

July 2000 Staff grants Shieldalloy's request for a one-year deferral of decommissioning obligations after considering, as required by 10 C.F.R. § 40.42(f), whether postponing the initiation of decommissioning would be detrimental to public health and safety and would otherwise be in the public interest.

August 2001 Shieldalloy notifies the NRC of its intent to terminate license.

August 2002 Shieldalloy submits DP (Rev. 0) for its Newfield facility.

²⁸ The ADAMS accession numbers for documents relevant to the activities summarized below can be found in the Staff's May 8, 2008 filing before the Board.

November 2002 In response to DP submittal, Staff amends Shieldalloy's license to permit decommissioning activities only.

February 2003 Staff notifies Shieldalloy that it is unable to accept Rev. 0 for technical review, in part because the DP does not provide sufficient information in areas such as institutional controls, financial assurance and dose modeling. With respect to institutional controls, the Staff notes that Shieldalloy has not demonstrated the capability or willingness of any local or state government entity to fulfill this role in perpetuity.

May 2003 Shieldalloy submits a phased approach for decommissioning, which includes a twelve-part schedule.

Also in May 2003, the Staff releases SECY-03-0069, "Results of the License Termination Rule Analysis." Among other issues, SECY-03-0069 addresses the criteria for restricted release under the License Termination Rule (LTR) and institutional controls under the LTR. Staff concludes that the institutional control requirements necessary for the viability of the LTR's restricted release provisions in 10 C.F.R. § 20.1403 have been difficult for licensees to implement, particularly at sites contaminated with long-lived radionuclides such as uranium and thorium. Staff recommends that the Commission consider providing options under the LTR that would involve the NRC in the long-term oversight of certain decommissioning sites, such as through use of a POL/LTC.

November 2003 Commission issues SRM-SECY-03-0069, which approves certain Staff recommendations for restricted release and institutional controls under the LTR. Commission directs the Staff to gather comments on the recommended actions from the public, Agreement States, licensees and other interested stakeholders and share the results with the Commission before issuing final guidance.

April 2004 Staff issues Interim Guidance for use of a POL/LTC at the Newfield site. The purpose of the Interim Guidance is to provide Shieldalloy with information on key concepts underlying the POL/LTC option, as well as specific guidance for DP sections relying on the POL/LTC option.

December 2004 Shieldalloy submits an Action Plan for its Phased Approach to decommissioning.

February 2005 Shieldalloy submits a Revised Action Plan for its Phased Approach.

April 2005 Shieldalloy submits to the Staff a draft of Chapter 5, "Dose Modeling Evaluations," for a revised DP.

October 2005 Shieldalloy submits Rev. 1 of the DP for the Newfield facility.

January 2006 Staff rejects Rev. 1, concluding that accepting the DP would require multiple rounds of requests for additional information (RAIs) and finding that the DP is not consistent with the Staff's Interim Guidance on the LTC.

March 2006 Staff holds a public meeting with Shieldalloy to discuss a path forward for resubmission of the DP.

June 2006 Shieldalloy submits Rev. 1a of the DP.

October 2006 Staff accepts Rev. 1a for technical review.

Also in October 2006, the Staff issues revisions to two volumes of NUREG-1757, which contains the Staff's guidance for the use of a POL/LTC to satisfy the LTR's institutional control requirements.

As the above chronology reflects, prior to submitting Rev. 0 of its DP in 2002, Shieldalloy made several attempts to find a market for the slag and baghouse dust accumulated at the Newfield site. This approach, if successful, would have permitted Shieldalloy to decommission the site under the unrestricted use provisions of 10 C.F.R. § 20.1402. When Shieldalloy's efforts to sell slag and baghouse dust proved unsuccessful, Shieldalloy submitted Rev. 0, which proposed that a portion of its site be decommissioned under the restricted release provisions of 10 C.F.R. § 20.1403. The Staff was unable to accept Rev. 0 for technical review, however, in part because Shieldalloy had not demonstrated that any government entity would provide the institutional controls required by this approach. This was not a difficulty faced by Shieldalloy alone. As explained in SECY-03-0069, the Staff's analysis of the LTR revealed that for a small number of licensees the institutional control requirements of the LTR had been difficult to meet, particularly where the licensees' sites were contaminated with long-lived radionuclides such as uranium and thorium. The Staff sought to address this issue by developing the POL/LTC option. This option, which was incorporated in the October 2006 revisions to NUREG-1757, forms the basis for Rev. 1a of Shieldalloy's DP.

B. The Staff's Review of Rev. 1a

Since late October 2006, the Staff has been conducting its technical review of both the environmental and safety-related aspects of Rev. 1a. The Staff formed Environmental Review and Safety Review Teams in October 2006, and these teams are working to prepare the EIS and safety evaluation report (SER) for the Newfield site. The Environmental Review Team is

composed of staff from the NRC and its contractor, Ecology & Environment, while the Safety Review Team is composed entirely of NRC staff.²⁹

In March 2007, the Staff transmitted 14 environmental RAIs to Shieldalloy. Shieldalloy responded to the environmental RAIs in April 2007. Then, in July 2007, the Staff transmitted 73 safety RAIs to Shieldalloy. It is Shieldalloy's responses to those RAIs that have resulted in the Staff revising its estimates for the completion dates of documents associated with the DP's technical review.³⁰

Shieldalloy provided a partial response to the safety RAIs in November 2007. At that time Shieldalloy informed the Staff it intended to complete its safety RAI response by submitting another revision to the DP, Rev. 1b, in May 2008. Shieldalloy later informed the Staff that, to provide a full response to the RAIs, it also intended to conduct additional leachability tests on slag and baghouse dust at the Newfield site. Shieldalloy stated that it would then supplement Rev. 1b with additional RAI responses. Because Shieldalloy would need to wait for test results before finalizing its supplemental RAI responses, those responses were scheduled to be submitted up to 90 days after Rev. 1b, in July or August 2008. Both of those decisions on the part of Shieldalloy required adjustments to the estimated completion dates for Staff-generated documents.³¹

Over the last two months, the Staff and Shieldalloy have been engaged in extensive discussions regarding the protocols for leach rate testing of slag and baghouse dust at the Newfield site.³² As explained in the Staff's Seventh Status Report,³³ these discussions are

²⁹ "Affidavit of Rebecca Tadesse in Support of NRC Staff's Response to LBP-08-08" (Tadesse Affidavit) (Attachment 1) at ¶ 4.

³⁰ Tadesse Affidavit at ¶¶ 5–8.

³¹ Tadesse Affidavit at ¶ 8.

³² Tadesse Affidavit at ¶¶ 13–14.

³³ "NRC Staff's Seventh Status Report" (June 6, 2008) (ADAMS Accession No. 081580624).
(continued. . .)

critical to the Staff's technical review because leach rates affect the analysis in numerous sections of the DP. For example, the results of leach rate testing are highly relevant to assessing the radiological status of the Newfield site (Chapter 4), dose modeling (Chapter 5), the design of the engineered barrier (Chapter 8), and institutional controls (Chapter 16).³⁴

Although Shieldalloy proposed additional leach rate testing in the context of responding to the Staff's safety RAIs, the results of Shieldalloy's testing and the content of Rev. 1b are also highly relevant to the Staff's preparation of the EIS for the Newfield site. That is because the environmental impact of leaving slag and baghouse dust at the Newfield site under a long-term control approach will depend in large part on the leach rates of this material. Accordingly, based on Shieldalloy's decision to submit Rev. 1b, the Staff has adjusted the estimated release dates not only for the documents associated with its safety review, but also for the draft and final EIS.³⁵

Leach rate testing is not only a highly important matter in this case; it is a complex matter.³⁶ The Staff strongly disagrees with the Board's characterization of the material at the Licensee's site as "nothing more than a slag pile." The material accumulated at the Newfield site in fact sits in nine separate piles. These piles contain varying amounts of slag, baghouse dust, or a combination of the two materials. This may affect the radiological characterization of the piles, because concentrations of uranium and thorium in the slag at the Newfield site appear to differ significantly from those in the baghouse dust. Moreover, the slag at the Newfield site itself varies to some extent, both in size and radiological composition. Characterizing the piles is also a complex matter because there are no established protocols for testing the slag and

(. . .continued)

³⁴ Tadesse Affidavit at ¶ 10.

³⁵ Tadesse Affidavit at ¶¶ 8–10.

³⁶ Tadesse Affidavit at ¶ 11.

baghouse dust accumulated at the Newfield site.³⁷ The lack of such protocols distinguishes the decommissioning of the Newfield site from the decommissioning of certain other facilities, such as power reactors. The Staff would note that several of NJDEP's contentions seem to make the very point that the material accumulated at the Newfield site is not merely a slag pile subject to easy characterization. In Contention 2, for example, NJDEP objects to the testing protocols Shieldalloy applied in the DP for purposes of assessing the leachability of slag at the Newfield site.³⁸

To facilitate Shieldalloy's development of revised leach rate testing protocols, members of the Staff's DP review team visited the Newfield site on June 2 and 3, 2008.³⁹ As a result of that visit, Shieldalloy provided the Staff with modified sampling and testing protocols on June 11, 2008. On June 12, 2008, the Staff provided Shieldalloy with comments on the modified protocols. During the week of June 16–20, 2008, Shieldalloy began taking samples from the Newfield site for use in leach rate testing. On June 18, 2008, Staff members again visited the Newfield site to observe Shieldalloy's sampling procedures. The Staff and Shieldalloy are presently engaged in continuing discussions regarding additional elements of Shieldalloy's testing and sampling protocols. Because Shieldalloy continues to finalize these protocols, the Staff will likely need to further revise the estimated release dates for documents associated with the technical review.⁴⁰

The Board deferred ruling on NJDEP's remaining contentions because of its sense that the DP "might undergo significant revision" and because it found "at least a considerable

³⁷ Tadesse Affidavit at ¶ 12.

³⁸ NJDEP Hearing Request at 11–14.

³⁹ NJDEP representatives were present during the site visit on June 2, 2008.

⁴⁰ Tadesse Affidavit at ¶ 14. The Staff also cannot rule out the possibility that it will need to transmit a limited number of additional RAIs involving issues other than leach rate testing.

measure of uncertainty as to whether, at the end of the day, the decommissioning of the Licensee's site will take the form that is contemplated by the DP now in hand."⁴¹ At present, Shieldalloy's DP is undergoing revision in the critical area of leach rate testing. This revision requires that Shieldalloy finalize its protocol for leach rate testing, take samples and submit the samples for testing, await test results, and incorporate the test results in its DP. Each of these steps takes time, and, as a result, the Staff has had to revise the estimated release dates for documents associated with its review of the DP.⁴² In its March 28, 2007 Order, the Board recognized that Shieldalloy's DP might be revised to some extent, and might even "undergo significant revision."⁴³ The Staff submits that, given Shieldalloy's decision to further revise its DP, it should not be unexpected that the release dates for Staff documents associated with the DP review might also undergo revision.

C. Protective Measures at the Newfield Site

In its June 2, 2008 Memorandum, the Board expressed concern that "not even a portion of the protective measures contemplated by the challenged plan are in place." This statement requires elaboration. Although Shieldalloy obviously cannot implement the DP without the Staff's approval, Shieldalloy has certain protective measures in place at the Newfield site that are essentially the same as those contemplated by the DP. The Staff will discuss these measures below.

First, however, the Staff would emphasize that, while the DP review is pending, Shieldalloy remains a licensee subject to NRC regulation. Shieldalloy must therefore comply with all applicable NRC regulatory requirements, including the occupational and public dose

⁴¹ LBP-07-05, 65 NRC at 360-61.

⁴² Tadesse Affidavit at ¶ 8.

⁴³ LBP-07-05, 65 NRC at 360.

limits in Subparts C and D of 10 C.F.R. Part 20. Shieldalloy must also comply with its license conditions, which include conditions pertaining to occupational exposures.

The Staff regularly inspects the Newfield site to monitor Shieldalloy's compliance with NRC regulations and its license conditions. The Staff completed its most recent inspection in November 2007. The results of this inspection are documented in a publicly available report dated January 11, 2008.⁴⁴ Among other issues, the Staff evaluated Shieldalloy's Radiation Protection Program (RPP), the security and access control measures in place at the Newfield site, and the condition of licensed material. The Staff also measured radiation exposure rates at the site and participated in groundwater sampling with representatives from both Shieldalloy and NJDEP. The Staff's inspection revealed one violation of NRC requirements involving Shieldalloy's failure to perform an annual review of its RPP as required by 10 C.F.R. § 20.1101. The Staff found this violation to be of low safety significance because Shieldalloy has ceased active operations at the Newfield site. Consistent with Section VI.A of the NRC's Enforcement Policy, the Staff disposed of this violation as a Non-Cited Violation (NCV), because the violation was identified by Shieldalloy itself, Shieldalloy committed to appropriate and timely corrective actions, and the violation was not repetitive or willful. The Staff did not identify any other violation during the inspection. The Staff would note that the most recent prior inspection of the Newfield site revealed no violations of any NRC requirement.⁴⁵

As reflected in the most recent inspection report, Shieldalloy has implemented certain protective measures that are also elements of its DP. Access to the Newfield site as a whole is restricted by means of a locking perimeter fence.⁴⁶ There is an additional locking fence that

⁴⁴ "Inspection No. 04007102/2006001, Shieldalloy Metallurgical Corporation, Newfield, New Jersey" (ADAMS Accession No. ML080170065) (January 11, 2008).

⁴⁵ "Inspection 04007102/2003001, Shieldalloy Metallurgical Corporation, Newfield, New Jersey Site" (March 20, 2005) (ADAMS Accession No. ML050800494).

⁴⁶ Inspection Report (January 11, 2008) at 1.
(continued. . .)

restricts worker access to the portion of the site containing slag and baghouse dust.⁴⁷

Shieldalloy also has a sign-in and sign-out procedure to monitor site access, as well as warning signs posted along perimeter fences.⁴⁸ These access control measures are similar to those contemplated by the DP.⁴⁹ Shieldalloy also has in place a radiation monitoring program, under which it conducts quarterly radiation testing with a thermoluminescent dosimeter (TLD).⁵⁰ This type of testing is an element of the DP as well.⁵¹ Further, although not a measure specified in the DP, Shieldalloy has constructed a berm on the south side of the storage area at the Newfield site, where most of the baghouse dust is located.⁵² According to Shieldalloy, the berm was constructed to ensure that rainwater runoff does not transport baghouse dust outside the storage area.⁵³

The Staff does not believe there is any sufficient basis at this time for ordering Shieldalloy to implement the primary physical protective measure contemplated by the DP, an engineered barrier that would cover slag and baghouse dust at the Newfield site.⁵⁴ Shieldalloy's license conditions do not provide a basis for ordering such an action, nor is there an adequate basis for invoking the Commission's general safety authority to support an enforcement order

(. . .continued)

⁴⁷ *Id.*

⁴⁸ *Id.*; Tadesse Affidavit at ¶ 16.

⁴⁹ See Rev. 1, Vol. 1 at Chap. 16.3.2, pp. 155–56 (describing physical access control mechanisms to be implemented by the DP).

⁵⁰ Inspection Report (January 11, 2008) at 2–3.

⁵¹ See Rev. 1, Vol. 1 at Chap. 16.4, p. 157 (stating that Shieldalloy “will patrol, inspect and assess ambient radiation exposure rates around the perimeter of the restricted area and the surface of the engineered barrier at least once per calendar quarter”).

⁵² Tadesse Affidavit at ¶ 16.

⁵³ Transcript of April 28, 2008 Prehearing Conference at 19.

⁵⁴ Tadesse Affidavit at ¶ 17.

under 10 C.F.R. § 2.202. To support an order under this section, the NRC must allege either that the licensee is in violation of NRC requirements or specify “the potentially hazardous conditions or other facts deemed to be sufficient ground for the proposed action[.]” 10 C.F.R. § 2.202(a)(1). As explained above, the Staff’s two most recent inspections of the Newfield site uncovered only one violation of low safety significance. There is no evidence of any violation or potentially hazardous condition that would support ordering Shieldalloy to implement an engineered barrier as an interim protective measure.⁵⁵

Moreover, even if the Staff could order Shieldalloy to construct some type of barrier as an interim protective measure, the Staff submits that such an action would be particularly inappropriate in this case. Applying either a rock-and-soil or synthetic cover would require consolidating and regrading the nine separate slag and baghouse dust piles at the Newfield site into a single mound that could be capped. This interim measure would, in itself, require technical review by the NRC Staff. In addition, such a measure would complicate efforts to characterize the slag and baghouse dust at the Newfield site, and it would impede efforts to evaluate contaminant migration in the subsurface next to the piles. In other words, this approach would complicate, and likely prolong, the Staff’s review of the DP.⁵⁶ Further, if Shieldalloy were to consider changing its decommissioning approach from the POL/LTC option to offsite removal, the addition of interim cover material might foreclose such a revision. That is because adding interim cover material would both increase the amount of material to be removed from the Newfield site and, potentially, reduce funds available for decommissioning.⁵⁷

⁵⁵ Tadesse Affidavit at ¶ 17.

⁵⁶ Tadesse Affidavit at ¶ 18.

⁵⁷ Tadesse Affidavit at ¶ 19.

II. JPG

In *JPG*, the Licensee, the United States Army, applied for approval of an alternate schedule under 10 C.F.R. § 40.42(g)(2) to submit a DP for its site in Madison, Indiana, where the Army's past operations had left a quantity of depleted uranium (DU) munitions onsite.⁵⁸ The Army sought a period of five years, concluding at the end of 2011, to complete its characterization of the *JPG* site, after which the Army would submit its DP. Accompanying the Army's application was a Field Sampling Plan (FSP), which set forth the activities the Army planned to take to characterize its site.

The Staff prepared an Environmental Assessment (EA) related to the Army's application for an alternate schedule, from which the Staff concluded that approving the alternate schedule would have no significant impact on human health or the environment.⁵⁹ The Staff also prepared an SER, in which the Staff concluded that approving the alternate schedule would not adversely affect public health and safety. Accordingly, the Staff approved the Army's request for an alternate schedule.

Because there was an ongoing adjudicatory proceeding in *JPG*, the Staff notified the Board in that case of its issuance of the alternate schedule. The Staff's notification, dated April 27, 2006, states that its review of the alternate schedule "includes a finding that [the license amendment] presents no undue risk from radiation to the public health and safety."⁶⁰

In its June 2, 2008 Memorandum, the Board in *Shieldalloy* implied that there have been no determinations by the NRC Staff of the measures needed to ensure that public health and

⁵⁸ "Letter Requesting an Alternative Schedule for the Decommissioning Plan of the *JPG* License" (May 25, 2005) (ADAMS Accession No. 051520319).

⁵⁹ "Environmental Assessment Related to Issuance of a License Amendment to U.S. Nuclear Regulatory Commission Materials License No. SUB-1435" (March 6, 2006) (ADAMS Accession No. ML053130257).

⁶⁰ "NRC Staff Notification of License Amendment Issuance" (Apr. 27, 2006) (ADAMS Accession No. 073090579).

safety and the environment are not adversely affected by DU munitions at the JPG site.⁶¹ This is incorrect. As explained above, in 2006 the Staff found that approving the alternate schedule would not present any undue radiological risk to public health and safety. The Board eventually held a hearing at which it addressed a contention from the Intervenor challenging the alternate schedule. After the hearing, the Board reached the same conclusion as the Staff. The Board stated:

For the foregoing reasons, we conclude that the Intervenor's challenges to the Field Sampling Plan must be rejected with the consequence that *the Staff justifiably issued the requested license amendment* providing for the alternate schedule.

U.S. Army (Jefferson Proving Ground Site), LBP-08-04, 67 NRC __ (slip op. at 55) (emphasis added).

The Board in *JPG* was not entirely in agreement on the legal requirements applicable to requests for an alternate schedule under 10 C.F.R. § 40.42(g)(2), and one judge prepared a separate opinion addressing this issue.⁶² However, both the majority and separate opinions acknowledged that approving the Army's request for an alternate schedule would have no significant impact on public health or safety.

The majority opinion in LBP-08-04 addressed legal and safety issues associated with the proposed alternate schedule, and made findings regarding the sufficiency of the Army's FSP.⁶³ The majority found the biota sampling component of the FSP to be sufficient to meet the criteria in 10 C.F.R. § 40.42(g)(2).⁶⁴ Regarding airborne radiation exposure, the majority determined

⁶¹ LBP-08-08, 67 NRC __ (slip op. at 13–14).

⁶² LBP-08-04, 67 NRC __ (Separate Opinion of Judge Abramson (Concurring in the Result but Disagreeing in Material Aspects of the Legal Analysis)).

⁶³ LBP-08-04, 67 NRC __ (slip op. at 27–31, 37–40, 52–55).

⁶⁴ *Id.* (slip op. at 27).

that "the potential radiation dose to the public is minimal."⁶⁵ The Board made a similar finding with respect to exposure by water, relying in part on evidence that uranium had not migrated more than two feet from the DU penetrators between 1994 and 2002.⁶⁶

The separate opinion was more direct in finding no risk to health and safety associated with the alternate schedule. The judge concluded:

Finally, it is worth noting that one of the conditions precedent to the grant of the requested extension is that it present no undue risk from radiation, and, in this regard, I note several factors: (a) the DU projectiles have been in the site since 1994 and are lying along a single target line, creating a sort of trench through a portion of the site; (b) those projectiles are, for all practical purposes, intact; and (c) there has been very little leaching of DU off of those projectiles into the soil, with data gathered so far indicating no presence of DU beyond 23.6 inches from a projectile. Thus, *there is no reason to believe that any reasonable period of further delay to properly and safely characterize the site creates any risk to the health and safety* of the nearby population from radiation from the DU that is the subject of this license.

LBP-08-04, 67 NRC __ (Separate Opinion of Judge Abramson at 4) (footnotes omitted, emphasis added).

Accordingly, contrary to any implication by the Board in *Shieldalloy*, there have been multiple findings, by both the Staff and the Board members in *JPG*, that public health and safety will not be adversely affected by any delay related to the Army's alternate schedule for decommissioning.

The Board in *Shieldalloy* also implied that the public has not been informed of the Army's intentions for decommissioning the JPG site and that the Staff is seemingly unconcerned about nearby residents being "kept in the dark" with respect to decommissioning.⁶⁷ That is not the case. The NRC can only inform the public of a licensee's stated intentions; it would be inappropriate and confusing to the public if the NRC engaged in speculation about what actions a licensee might or might not propose. Under the alternate schedule approved by the Staff,

⁶⁵ *Id.* (slip op. at 38).

⁶⁶ *Id.* (slip op. at 55).

⁶⁷ LBP-08-08, 67 NRC __ (slip op. at 14).

whose determination on this matter was upheld by the Board in *JPG*, the Army has until end of 2011 to complete its characterization of the JPG site, after which the Army will submit its DP. The Staff should not be faulted for failing to provide information concerning a DP that the Licensee is not required to submit at this time. Once the Army submits its DP, of course, the Staff will make the DP available to the public, as the Staff has done for other documents associated with the decommissioning of the JPG site.

CONCLUSION

Contrary to certain assertions in LBP-08-08, the Staff has been working diligently to see that Shieldalloy's Newfield site is decommissioned as soon as possible. The Staff continues to make progress in its technical review of the DP for this complex site. With respect to both the Newfield site and the United States Army's JPG site, the Staff has considered, through periodic inspections and through its review of license amendment requests, whether there is any significant threat to public health or safety associated with either site. The Staff has found no evidence of any such threat.

Respectfully submitted,

/RA/

Michael J. Clark
Counsel for the NRC Staff

Dated at Rockville, Maryland
this 3rd day of July, 2008

July 3, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of)
)
SHIELDALLOY METALLURGICAL CORP.) Docket No. 40-7102-MLA
)
(Licensing Amendment Request for)
Decommissioning of the)
Newfield, New Jersey Facility))

AFFIDAVIT OF REBECCA TADESSE IN
SUPPORT OF NRC STAFF'S RESPONSE TO LBP-08-08

I, Rebecca Tadesse, hereby state as follows:

1. I am employed by the U.S. Nuclear Regulatory Commission as Branch Chief in the Office of Federal and State Materials and Environmental Management Programs (FSME), Materials Decommissioning Branch (MDB). I am providing this affidavit in support of the NRC Staff's Response to LBP-08-08.

2. In my capacity as Section Chief in FSME/MDB, I supervise the NRC Staff's technical review of the decommissioning plan (DP) submitted by Shieldalloy Metallurgical Corporation for its site in Newfield, New Jersey.

3. The DP that the Staff is presently reviewing, Rev. 1a, was submitted to the NRC on June 30, 2006. The Staff accepted Rev. 1a for technical review on October 18, 2006.

4. In connection with its technical review of the DP, the Staff formed Environmental Review and Safety Review Teams in October 2006. These teams are presently working to prepare the environmental impact statement (EIS) and safety evaluation report (SER) for the Newfield site. The Environmental Review Team is composed of staff from the NRC and its contractor, Ecology & Environment, while the Safety Review Team is composed entirely of NRC staff.

5. On March 19, 2007, the Staff transmitted 14 environmental requests for additional information (RAIs) to Shieldalloy. Shieldalloy responded to the environmental RAIs on April 24, 2007.

6. On July 5, 2007, the Staff transmitted 73 safety RAIs to Shieldalloy. Shieldalloy provided a partial response to those RAIs on November 9, 2007. At that time Shieldalloy also informed the Staff that it intended to complete its safety RAI response by submitting another revision to the DP, Rev. 1b, in May 2008.

7. Shieldalloy later informed the Staff that, to provide a full response to the safety RAIs, it intended to conduct additional leachability tests on slag and baghouse dust at the Newfield site. Shieldalloy stated that it would then supplement Rev. 1b with additional RAI responses.

8. Shieldalloy's decisions to submit an additional revision to its DP and otherwise supplement its RAI responses required adjustments to the estimated completion dates for Staff-generated documents, including the SER and the final EIS.

9. More recently, Shieldalloy informed the Staff that it intends to revise its protocols for testing slag and baghouse dust at the Newfield site.

10. Leach rate testing protocols, and the results of leach rate testing, are highly relevant to both the Staff's safety and environmental review of the DP. These results may affect the analysis in numerous sections of the DP, including sections assessing the radiological status of the Newfield site (Chapter 4), dose modeling (Chapter 5), the design of the engineered barrier (Chapter 8), and institutional controls (Chapter 16).

11. Developing leach rate testing protocols for the slag and baghouse dust at the Newfield site is complicated by several factors. The material accumulated at the Newfield site does not sit in single pile, but in fact sits in nine separate piles. These piles contain varying amounts of slag, baghouse dust, or a combination of the two materials. This may affect the

radiological characterization of the piles, because concentrations of uranium and thorium in the slag at the Newfield site appear to differ significantly from those in the baghouse dust. The slag at the Newfield site itself varies to some extent, both in size and radiological composition.

12. Characterizing the piles of slag and baghouse dust at the Newfield site is further complicated by the fact that there are no established protocols for testing this type of material.

13. To facilitate Shieldalloy's development of revised leach rate testing protocols, NRC Staff visited the Newfield site on June 2 and 3, 2008. Representatives from the New Jersey Department of Environmental Protection were present during the site visit on June 2, 2008. As a result of that visit, Shieldalloy provided the Staff with modified sampling and testing protocols on June 11, 2008. On June 12, 2008, the Staff provided Shieldalloy with comments on the modified protocols. During the week of June 16–20, 2008, Shieldalloy began taking samples from the Newfield site for use in leach rate testing. On June 18, 2008, Staff members again visited the Newfield site to observe Shieldalloy's sampling procedures.

14. The Staff and Shieldalloy are presently engaged in continuing discussions regarding additional elements of Shieldalloy's testing and sampling protocols. Because Shieldalloy continues to finalize these protocols, the Staff will likely need to further revise the estimated release dates for documents associated with its technical review.

15. The Staff has considered what protective measures are presently in place at the Newfield site while the DP review is pending. The Staff has also considered whether it might order Shieldalloy to implement certain additional protective measures prior to a final Staff decision on whether to accept or reject the DP.

16. Shieldalloy has certain measures in place at the Newfield site that are intended to limit the potential for radiological exposures involving workers and members of the public. These include access control measures such as locking fences, warning signs, and a sign-in and sign-out procedure. Shieldalloy has also constructed a berm along a portion of the

restricted area of its site. Shieldalloy has informed the Staff that the purpose of the berm is to prevent rainwater runoff from transporting baghouse dust outside the restricted area.

17. At the present time, the Staff is not aware of any technical basis for ordering Shieldalloy to put in place the primary physical protective measure contemplated by the DP, an engineered barrier that would cover the slag and baghouse dust at the Newfield site.

18. Even if the Staff could order Shieldalloy to construct some type of barrier as an interim protective measure, such an action would be inappropriate at this time. Applying either a rock-and-soil or synthetic cover would require consolidating and regrading the nine separate slag and baghouse dust piles at the Newfield site into a single mound that could be capped. This interim measure would, in itself, require technical review by the NRC Staff. In addition, such a measure would complicate efforts to characterize the slag and baghouse dust at the Newfield site, and it would impede efforts to evaluate contaminant migration in the subsurface next to the piles.

19. Further, if Shieldalloy were to consider changing its decommissioning approach to offsite removal of slag and baghouse dust, the addition of interim cover material might foreclose such a revision. That is because adding interim cover material would both increase the amount of material to be removed from the Newfield site and potentially reduce funds available for decommissioning.

20. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

This affidavit was executed this 3rd day of July, 2008, at Rockville, Maryland.

/Original signed by/

Rebecca Tadesse

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of)
)
SHIELDALLOY METALLURGICAL CORP.) Docket No. 40-7102-MLA
)
(Licensing Amendment Request for)
Decommissioning of the)
Newfield, New Jersey Facility))

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S RESPONSE TO LBP-08-08" in the above captioned proceeding have been served on the following persons by deposit in the United States Mail; through deposit in the Nuclear Regulatory Commission internal mail system as indicated by an asterisk(*); and by electronic mail as indicated by a double asterisk (**) on this 3rd day of July, 2008.

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/RA/

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