UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

JUN 2 3 1994

Docket 40-7102
License SMB-743

Mr. David R. Smith
Director, Environmental Services
Shieldalloy Metallurgical Corproation
12 West Boulevard
P.O. Box 768
Newfield, New Jersey 08344

Dear Mr. Smith:

SUBJECT: REQUEST FOR INFORMATION REGARDING NEWFIELD ENVIRONMENTAL IMPACT STATEMENT

In order to assist the U.S. Nuclear Regulatory Commission in the development of an environmental impact statement (EIS) regarding the permanent disposal of radioactive contaminated material at the Shieldalloy Metallurgical Corporation (SMC) facility in Newfield, New Jersey, please respond to the questions in Enclosure 1. When Mr. Stephen Rappaport and other representatives of SMC and Metallurg met with NRC in November 1993, Mr. Rappaport committed to provide information to support the development of the EISs for both the Cambridge and Newfield sites. We have attempted to minimize the requested information, while assuring the availability of information considered essential for the development of the EISs. This request includes the information needs identified by NRC and Oak Ridge National Laboratory (ORNL) staff based on a preliminary review of existing information and examination of information provided during the recent site visit. Some of the requested information may have been provided to NRC in previous transmittals. If this is the case, please reference those documents along with the relevant section or page numbers where the information resides. Enclosure 2 is a list of the documents that have been referenced by you in past documents or conversations, but NRC does not have in its inventory. Please provide copies of these documents with your submittal. Enclosure 3 is a brief description of how NRC currently conceptualizes the proposed action and the alternatives.

NRC requests that you respond by July 30, 1994, so this information is available for consideration in the preparation of the draft EIS. If there is any information that will require studies which will not allow you to respond by this date, please submit a work plan outlining the work that will be performed and the schedule for completion. Please also submit a copy of your quality assurance and quality control measures that have been implemented to

NF03 |

JUN 2 3 1994

ensure that the generated information is of high quality. If needed, a meeting can be scheduled in the interim period to discuss any or all of the questions. Please forward your response to:

Gary C. Comfort, Jr.
U.S. Nuclear Regulatory Commission
Mail Stop TWFN 8-A-33
Washington, DC 20555

If you have any questions, please call me at 301-415-8106.

Sincerely,

Original Signed By:

Gary C. Comfort, Jr.
Licensing Section 2
Licensing Branch
Division of Fuel Cycle Safety and
Safeguards, NMSS

Enclosures:
1. Request for Additional Information
2. List of Omitted Documents
3. Proposed Action & Alternatives

DISTRIBUTION: w/encls.

Docket 40-7102	NRC File Center	PDR/LPDR	NMSS R/F
FCSS R/F	FCLB R/F	MAdams	Region I
FCLS2 R/F	CGlenn, WM	MWeber, WM	DDeMarco

OFC	FCLB	E	FCLB	E	FCLB	C	WM		FCLB	C
NAME	GComfort		VTharpe		MTokar		JAustin		RPierson	
DATE	06/21/94		06/21/94		06/21/94		06/23/94		06/21/94	

C = COVER E = COVER & ENCLOSURE N = NO COPY
OFFICIAL RECORD COPY
G:\SH061694.GCC

Enclosure 1

Please provide the following information:

General

1. Provide the status of all lagoons, past and present, and a sketch of the locations of these lagoons.

2. Provide descriptions (location, area, and buildings) and maps of property owned by SMC in the immediate area, but not considered as part of the SMC license.

3. In a fact sheet presented by SMC during the December 1993 scoping meeting, SMC stated that operations could continue at the current production rate through 2430. In 2430, what would the inventory be for the slag and baghouse dust piles?

4. Provide average measurements of radionuclide concentrations of the source ore used to produce the ferrovanadium slag and the ferrovanadium slag itself. Is (or was) the same foundry equipment used in the ferrovanadium process as is used for the ferrocolumbium process? If so, please describe any techniques used to assure that cross-contamination did not occur.

5. Provide a complete fractional composition (e.g., ppm) by mass of all elements in the slag and baghouse dust. Compositional analysis should include radiological and nonradiological constituents in the slag.

6. Describe the amount, location, and type of hazardous waste, if any, that may be disposed of in conjunction with the disposal of slag and baghouse dust piles. If such wastes do exist, describe planned methods of disposal.

7. Provide a comprehensive discussion of the storage practices that have been utilized at the Newfield site during its operation. At a minimum, include the rationale used for situating the slag piles; a discussion of the distribution of any processed material outside of the slag piles or dust pile (including its use in any road construction); and any methods used to prevent the dispersion of material from the piles to other locations around the site and the efficacy of those measures.

8. Provide information on any wetland and floodplain delineation\assessment that may have been conducted for the Newfield site.

9. Describe the amount, location, and type of hazardous waste, if any, and other waste materials or contaminants contained in the slag piles or at other locations onsite.

Atmospheric

1. Provide measured atmospheric concentrations and chemical composition of all particulate matter.

2. Provide air monitoring data from Building D111 surveys for the latest 3 years. Explain dramatic changes (if any occurred).

3. Discuss prevailing wind conditions in the vicinity of the slag yard.

Radiation Exposure

1. The "Conceptual Decommissioning Plan for the Newfield, New Jersey Facility," dated April 7, 1993, does not provide information on individual pathways of exposure, but rather provides total radiation doses from all pathways. Provide calculations and supporting data for each individual pathway.

2. In the "Conceptual Decommissioning Plan for the Newfield, New Jersey Facility," annual doses to a farm family residing on the decommissioned slag pile are shown in Figure 1 to be lowest initially and increase with time. However, the annual doses presented in Figure 3 of "Technical Basis for Decommissioning at the Cambridge, Ohio Facility," dated May 10, 1993, are highest initially and decrease with time. Explain this discrepancy.

3. Provide baseline concentrations of radionuclides in the vicinity of the site in air, surface water, groundwater, soil, vegetation, and sediments.

Socioeconomics

1. Characterize the current off-site use of utilities, solid waste disposal, waste water treatment, and transportation methods and routes (e.g., trucking routes to and from the site) as related to the existing source material license.

2. Characterize all land uses of properties that border or are in close proximity to SMC (please update and expand upon information provided in the October 1992 Applicant Environmental Report).

3. On a sketch map, identify any residential and business use of lands within 1.6 km (1 mile) of SMC.

4. On a sketch map, identify any areas (private or public land) used for hunting, fishing, recreation, herding, or cultivation within 1.6 km (1 mile) of SMC.

5. Have any archaeological surveys been conducted on or near SMC property?

6. Provide copies of any relevant correspondence with the Division of Natural and Historic Resources, New Jersey Department of Environmental Protection and Energy.

7. Provide copies of any correspondence, reports, or fact sheets that address SMC's business prospects and role in county and state-wide economic development.

8. Provide the following demographic information on SMC's current work force:

   a) How many people are employed?

   b) What is the percentage of employees by place of residence?

   c) What percent are single? married? married with families?

   d) What percent rent? own their own home?

   e) What percent travel to work by a major route?

   f) What percent have been employed for <1 year? 1-2 years? 2-5 years? 5-10 years? 10-20 years? 20-30 years? >30 years?

9. Provide names of any contacts at the county, township, or community level who would be knowledgeable about SMC and its relationship with nearby populations and other business interests (e.g., county economic development corporations or county planning offices for Cumberland, Salem, and Gloucester Counties).

10. Provide names of SMC public relations office personnel.

<u>Hydrology</u>

1. On a sketch or map, show Hudson Branch from its headwaters to its confluence with Burnt Mill Branch. As much detail as possible should be provided, including losing and gaining reaches of the stream, marshy or swampy areas, outfalls, and nearby ponds (both natural and man-made).

2. What is the location and distance from the SMC site to the nearest municipal water supply and its source of water? Provide a map of its location which also shows the location of any private water supplies within 1 mile of the site.

3. Provide water quality and flow rate measurements for Hudson Branch.

4. Provide discharge rates for Hudson Branch (calculated will be acceptable if measured discharges are not available).

5. Provide a discussion of the flood history of the Newfield site and its environs.

6. What is the groundwater elevation below the expected disposal area?

7. Provide a description of preexisting chemically stressed (i.e., contaminated) groundwater environments and sources of contamination to any water body that may affect local water quality.

8. Is there any known groundwater contamination associated with any source from the slag yard? If so, please discuss any remediation plans for the cleanup of such contaminants.

9. Provide names of contacts within the New Jersey Geological Survey and New Jersey Department of Environmental Protection and Energy that are knowledgeable about the surface water and groundwater quality at the Newfield site.

Soils

1. Describe soil conditions and transport rates of uranium and thorium through the soil.

2. Provide maps of any active or abandoned mines (if any) within a 2 mile radius of the sit

3. Discuss levels of radiological contaminants in any known soil samples elevated above background outside of the slag yard.

Alternatives

1. Provide information regarding the proposed action and alternatives found in Enclosure 3. SMC is welcome to discuss any other alternatives SMC would like NRC to consider. Information should include as much detail as possible. SMC may use information provided to justify why certain alternatives should not be considered in depth. The information for each alternative should include at a minimum:

- detailed conceptual plan descriptions of what SMC would expect to do under each option (e.g., barrier layer definitions for on-site disposal, including presumed type(s) of materials, quality, durability, thickness, strength, moisture and compaction density requirements, permeability, compressibility, erosion resistance, and radiation attenuation properties)
- inventories expected to remain onsite
- inventories expected to be transported for off-site disposal or sale
- size and location (U.S.G.S. grid coordinates) of on-site disposal areas
- methods and routes of off-site transportation, including presumed destination
- employment expectations (including subcontractor use) under each alternative during and after decommissioning
- monitoring and surveillance plans for on-site disposal (during and after decommissioning
- estimated costs and source of such costs (vendor, SMC experience, etc.)
- site utility supplies, solid waste disposal requirements, waste water treatment, and other system requirements both during and after decommissioning
- program for long-term custodial care of in-situ disposal (including financial assurance plan)
- quantities of any materials (specify) to be added to the site, along with their relevant transportation methods
- expected emissions of fugitive dusts (radioactive, hazardous, and benign) during on-site activities associated with decommissioning
- legal constraints which may limit the viability of any option

2. If different disposal methods for baghouse dust, slag, and other contaminated materials (e.g., soil, buildings, etc.) are a possibility under any or all alternatives, please provide specific information on each of these waste forms (i.e., instead of total inventories, provide inventories affected for each waste form).

<u>ENCLOSURE 2</u>

Please send the following documents. If you are unsure of what documents are being referred to, please call for a further description.

Source	Description	Reference or Comments
Administrative Consent Order (ACO)	ACO that drives the chromium-contaminated groundwater remediation	
Craig Rieman, SMC Ltr to Dale Hoffmeyer, USEPA (12/17/91)	Annual releases of radioactive materials in dust from the baghouses	It is cited in two SMC reports (the Applicant's Environmental Report for the Newfield, New Jersey, Facility and the Conceptual Decommissioning Plan for SMC Newfield, NJ)
Craig Rieman, SMC Ltrs to Donna Gaffigan, NJDEPE	Quarterly radiochemical groundwater sampling reports	We need copies of all the radiochemical groundwater sampling reports SMC has sent to NJDEPE
D. Raviv and Associates	Summary of Geohydrologic Information collected since January 1988 for SMC, April 1990	It is referenced in the Applicant's Environmental Report for the Newfield, New Jersey, Facility
David Smith, SMC Ltr to Yawar Faraz, USNRC	Annual increase in radioactive materials inventory in slag and baghouse dust	It is mentioned in two SMC reports (the Applicant's Environmental Report for the Newfield, New Jersey, Facility and the Conceptual Decommissioning Plan for SMC Newfield, NJ)
National Pollutant Discharge Elimination System (NPDES) permits	NPDES permits containing the limits for all Newfield site discharges	

Shieldalloy Metallurgical Corporation	Recent groundwater monitoring data (including flow rates and chemical analyses) for the three discharges located on the SMC site	
Shieldalloy Metallurgical Corporation and nearby businesses	Recent water quality reports from SMC and other facilities having discharges to or intakes from the surface water in the Hudson Branch between the West Boulevard complex and the SMC farm site and then on into Burnt Mill Branch	
Telephone books	State Office and Local telephone books	
TRC Environmental Consultants, Inc.	Risk assessment	It is mentioned in the Applicant's Environmental Report (IT/NS-92118 dated 10/28/92)
U.S. Geological Survey (USGS) publications [author, title, and publication date]	Studies of the hydrology, geohydrology, and water quality of the Newfield site and its surrounding hydrosphere	Similar documents from the State of New Jersey and Gloucester County would be beneficial
Unknown source	Ecological risk study	Reference was made to this study during informal conversations at the site visit
Unknown source	Endangered and threatened species study	Reference was made to this study during informal conversations at the site visit

Unknown source	Wetlands delineation study	Reference was made to this study during informal conversations at the site visit
Woodward-Clyde Consultants	Surface Water Contamination Study for Shieldalloy Corporation, March 1975	

Enclosure 3

2.1 PROPOSED ACTION AND ALTERNATIVES

2.1.1 On-site Stabilization and Disposal (Licensee's Proposed Action)

Radioactively contaminated materials would be consolidated and stabilized in a single pile that would be covered and graded in a manner to provide long-term protection against wind and water erosion and to minimize groundwater contamination. This alternative would also likely include land use restrictions and/or other institutional controls to prevent or reduce potential intrusion into the waste and to monitor the long-term effectiveness of the disposal and take mitigative measures as necessary to protect the public and environment. **[NRC: During the Newfield scoping meeting, a fact sheet was presented by Shieldalloy (Shieldalloy 1993). It stated that operations with columbium ore could safely continue at the current rate through the year 2430 before decommissioning. How much slag and baghouse dust would there be in 2430?]**

[NRC: The following is the description for Cambridge. Is this valid for Newfield? How much material will go into this pile?] The cap would be of a multiple-layer type, designed to minimize vertical infiltration of water through the covered area. Before cap construction, clean fill soils would be placed and contoured to provide long-term cap support and to minimize any potential future settlement problems. The multiple layer cap design would consist of the following elements:

Clay Layer. A 0.6-m (2-ft) minimum thickness, compacted layer with a verified 1×10^{-7} cm/s maximum permeability would be placed over the slag. Caps would also meet the general requirements set forth in 40 CFR 61 Subpart Q, and 40 CFR 192. The cap would be constructed with enough erosion resistance to provide reasonable assurance of containment of radioactive materials.

Drainage Layer. A 0.3-m (1-ft) thick drainage layer with a 2×10^{-3} cm/s minimum permeability would be placed over the clay. The upper portion would be a graded natural aggregate filter to protect the lower drainage layer from clogging. The all-natural drainage layer would alleviate concerns over long-term durability, as well as improve the overall drainage layer performance by the following:

- Reducing the hydraulic driving forces acting on the clay layer by more timely removal of water percolating through the vegetative cover.
- Balancing the moisture content of vegetative and clay layers against seasonal extremes, including drought.

Biointrusion Layer. A biointrusion barrier would be placed between the vegetative (see below) and drainage layers of the cap. This barrier would be a 0.6-m (2-ft) thick layer of cobbles, and is designed to preclude deep rooting plants and burrowing animals from damaging the clay layer lying below the drainage layer. This layer would have cobbles that progressively grade with depth to the size suitable for the drainage layer.

Vegetative Layer. A 0.6-m (2-ft) thick vegetative layer placed over the biointrusion layer would be composed of clean soils with the upper 0.1 m (3 in.) capable of supporting healthy, shallow-rooted plants [i.e., root zone no deeper than 0.3 m (12 in.)]. The vegetative layer would protect the clay layer against environmental abrasion including desiccation, freeze/thaw damage, erosion, and stresses caused by standing and ponding water.

All cap layers would be contoured to grades that promote drainage while minimizing the effects of subsidence and storm water erosion. **[NRC: Need more detail on how the site would be graded and what materials would be imported to the site. A schematic showing finished grades is also needed depicting the details of the cap as well as the final footprint of the piles. Will this cap have the capability to contain all the waste adequately (radiological, non-radiological, and hazardous, if any is present)? If not, a new design will be necessary. How much will this cost? How many truck loads of capping material? How many workers will be present during construction? What monitoring and mitigation will be needed?]**

2.1.2 Off-site Disposal

Radioactively contaminated materials would be exhumed and taken off-site to a licensed low-level waste disposal facility. The disposal facility could be located in the vicinity of Newfield, if any such facilities were determined to be available at the time of decommissioning, or in another State. This alternative could also consider disposal of the contaminated materials along with other wastes of similar physical, chemical, and radiological characteristics, such as mill tailings. This could involve a dedicated disposal facility that would provide enhanced barriers against human intrusion into the waste for thousands of years, such as a deep mine. Radioactive contamination on-site would be reduced to levels that NRC currently considers acceptable for release for unrestricted use. The acceptable level for natural thorium (or ^{232}Th in secular equilibrium with ^{228}Th) and decay products is 10 pCi/g total thorium and for natural uranium (or ^{238}U in secular equilibrium with ^{234}U) and decay products is 10 pCi/g total uranium. **[NRC: How many truck or train car loads of radiological waste would be removed? What routes would be used? What are the estimated costs? Which transportation firms have been contacted? How much land would be disturbed on-site?]**

2.1.2.1 Ongoing Activities to Reduce the Existing Inventory

Rather than waiting for final decommissioning, existing radioactively contaminated materials would be examined to find candidate materials for prompt shipment to an off-site licensed disposal facility. The existing high-ratio slag pile would be an early possibility for removal under this alternative. Conducting inventory reduction as an ongoing activity would reduce the cost of the final decommissioning activities. **[NRC: How could the process work? How much material could be removed early? What would be the costs? How would it be transported? Where would it go?]**

2.1.3 On-site Separation Processing with Off-site Disposal

Radioactively contaminated material would be processed using chemical or physical methods to separate more highly concentrated contamination from lower concentrations that could be stabilized on-site. Higher concentration wastes would be sent off-site to a licensed disposal facility. Radioactive contamination on-site would be reduced to levels that NRC presently considers acceptable for release for unrestricted use. The acceptable level for natural thorium (or ^{232}Th in secular equilibrium with ^{228}Th) and decay products is 10 pCi/g total thorium and for natural uranium (or ^{238}U in secular equilibrium with ^{234}U) and decay products is 10 pCi/g total uranium. **[NRC: How much waste would stay? would leave?]**

2.1.3.1 Physicial Segregation

A segregation system would consist of a volume reduction process to ensure materials are of uniform size. A conveyor system would be used to transport the material through the segregation system. Materials would pass over and/or under radiation detection instrumentation for determination of whether materials exceed a predetermined concentration. Materials exceeding the criteria would be diverted automatically to a staging area while materials that meet these criteria were directed to a temporary staging area. This area could be a temporary structure, a modified existing structure, or a fenced, open area on the site. The staging area would provide a location for transferring contaminated materials from on-site transport vehicles to the waste package or transport container that would ultimately be used in transport for off-site disposal. Railroad cars or trucks could be used for the off-site transport. Materials not exceeding the criteria would be returned to the slag pile areas. **[NRC: Where would the lower-level materials be placed?]**

2.1.3.2 Chemical Extraction

Thermite Slag Recovery Technology is a chemical technique that could be used to extract thorium and uranium from the slag. **[NRC: How does the process work? What would be the costs? How much material could be treated this way? Would the processed slag be acceptable for unrestricted disposal?]**

2.1.3.3 Ongoing Activities to Reduce the Existing Inventory

During on-site processing, existing radioactively contaminated materials would be examined to find those that could be shipped promptly to an off-site licensed disposal facility. The existing high-ratio slag pile would be an early candidate for removal under this alternative. Conducting inventory reduction as an ongoing activity would reduce the cost of the final decommissioning activities. **[NRC: How could the process work? How much material could be removed early? What would be the costs? How would it be transported? Where would it go?]**

2.1.4 On-site Dilution Processing and Disposal

Existing radioactively contaminated materials would be blended with clean fill to reduce average concentrations of uranium and thorium to levels that NRC currently considers acceptable for release for unrestricted use. The acceptable level for natural thorium (or ^{232}Th in secular equilibrium with ^{228}Th) and decay products is 10 pCi/g total thorium and for natural uranium (or ^{238}U in secular equilibrium with ^{234}U) and decay products is 10 pCi/g total uranium. Diluted contamination would then be graded on-site and released for unrestricted use. **[NRC: How would this process work? Would the slag be ground into dust? How much fill would be needed? Where would the fill be placed? Would this be used only for the lime pile? What are the costs? Is this alternative allowed by NRC regulations?]**

2.1.5 On-site Stabilization and Dilution of Licensed Material with Resource Conservation and Recovery Act(RCRA)-Regulated Materials (Metal Hydroxide Sludges)

[NRC: We need more information in order to present this alternative. This is an alternative that Shieldalloy presented during the scoping process. How would the process work? Would fugitive emissions be expected? Where is the RCRA-licensed storage facility? Would this apply to all radioactively contaminated materials on the site? Would some waste be shipped off-site? What are the costs?]

2.1.5.1 Ongoing Activities to Reduce the Existing Inventory

As part of the investigation of applicable materials for on-site stabilization and dilution, existing radioactively contaminated materials would be examined to find those that could be shipped promptly to an off-site licensed disposal facility. The existing high-ratio slag pile would be an early candidate for removal under this alternative. Conducting inventory reduction as an ongoing activity would reduce the cost of the final decommissioning activities. **[NRC: How could the process work? How much material could be removed early? What would be the costs? How would it be transported? Where would it go?]**

2.1.6 Develop Commercial Uses and Markets

[NRC: We need more information in order to present this alternative. This is an alternative that Shieldalloy presented during the scoping process. What potential commercial uses would Shieldalloy suggest? How much material would be sold/removed? How would it be transported? How would licensing be handled?]

2.1.6.1 Domestic Markets

Potential commercial uses may include recycling baghouse dust and Smelting Thermal Recovery for steel conditioning. **[NRC: Either process requires detailed information from Shieldalloy before it can be evaluated.]**

2.1.6.2 Overseas Markets—Export the Slag

[NRC: We need more information in order to present this alternative. This is an alternative that Shieldalloy presented during the scoping process. Who are the potential recipients? How much material would/could be sold/removed? What would happen to unsold wastes? How would the wastes be transported?—land? sea? air? How would licensing be handled? What are the costs of exporting?]

2.1.7 No Action

Radioactively contaminated materials would be abandoned in the present configuration without any additional processing or stabilization. This alternative does not consider any protective measures, such as land use restrictions or other institutional controls, that might prevent intrusion into the waste or long-term release and transport of contamination in the environment. This alternative is considered for compliance with the implementing regulations for NEPA. It may not comply with NRC regulations.

2.2 ALTERNATIVES CONSIDERED BUT DELETED FROM DETAILED CONSIDERATION

This heading is being held for future use.