



CD08-0014

January 11, 2008

Mr. Stephen Dembek
Office of International Programs
U.S. Nuclear Regulatory Commission
Mail Stop O4E21
11555 Rockville Pike
Rockville, MD 20852

Subject: Supplemental Request for Additional Information Regarding License
Applications: IW023 & XW013

Dear Mr. Dembek

In a letter dated December 20, 2007, the Nuclear Regulatory Commission requested additional information (RAI) regarding EnergySolutions' license application IW023 and XW013. The following letter provides the additional information requested.

NRC Question 1:

In EnergySolutions' December 5, 2007 response to NRC's question 4, EnergySolutions states, "No Class B, Class C or GTCC materials will be shipped to Utah. Since all the imported material will meet our licenses either at Bear Creek or Clive, none of the material will need to be returned to Italy." This response would seem to imply the possibility of long-term storage of Class B, C and GTCC waste at Bear Creek. The possibility of long-term storage is mentioned in the original application as well (Item 15, page 4, Processing section). Please clarify, the type, amount and activity of waste (if any) that will require long-term storage.

EnergySolutions Response:

There will be no long-term storage of Class B, C or GTCC waste at the Bear Creek facility. Long-term storage is not authorized under our Tennessee Radioactive Materials Licenses. Before any material leaves Italy, EnergySolutions will subject it to an extensive waste characterization. EnergySolutions will ensure that all of the imported material will comply with its licenses at either Bear Creek or Clive. The material will be recycled, processed and/or disposed.

NRC Question 2:

In EnergySolutions' December 5, 2007 response to NRC's question 7, EnergySolutions states, "Only about 8% (by volume) of total imported material is estimated to be disposed of at the Clive, Utah facility." This statement appears to contradict a statement in Block 15 in the application that suggests the waste is imported "primarily for processing and/or



disposal in accordance with EnergySolutions existing Utah disposal license.” Please address this apparent contradiction.

EnergySolutions Response:

The imported material will be processed primarily through incineration, volume reduction or other processing methods. A significant amount of the material will be recycled and formed into shield blocks to be reused in the nuclear industry. The remaining material, approximately 8% by volume, will be disposed of at the Clive, Utah facility. More details of the amounts and disposition pathways are provided in response to Question 6.

The initial license application was written to provide flexibility for EnergySolutions to determine the most efficient pathway during material management activities. In response to the NRC first RAI, estimated disposition pathways percentages were provided. These values were best estimates and are not a committed maximum.

NRC Question 3:

In EnergySolutions’ December 5, 2007 response to NRC’s question 8, EnergySolutions discusses the possible beneficial reuse of 7000 tons of metal as shielding material. EnergySolutions should provide some indication regarding the domestic market for the types and quantities of shielding that can be remanufactured from waste steel and moderator metals. Please identify any detailed information in the response to this request for which EnergySolutions requires confidentiality.

EnergySolutions Response:

The company’s current customer for shield blocks is in Japan. The existing contract is to fabricate 500 shield blocks (approximately 10 tons each). The company has an option under the contract to provide up to 350 additional blocks. The company anticipates using imported material from Italy to fulfill this contract. In addition, the company is exploring opportunities domestically for the shield blocks and may use some of the shield blocks in-house.

NRC Question 4:

Throughout the original application and responses provided on December 5, 2007, there seems to be an implication that some waste that may otherwise be classified as class B or C can and will be processed to meet the Clive, Utah waste acceptance criteria (WAC). If this is the case, it suggests an increase in the volume of waste to be disposed of. Please clarify EnergySolutions intentions and likely volume impact regarding processing of Class B and C waste to meet the Clive WAC.



EnergySolutions Response:

EnergySolutions will receive and process the material in accordance with our Tennessee Radioactive Materials License. Processing at Bear Creek does not increase waste volumes and EnergySolutions will ensure that the material destined for disposal at Clive will meet the WAC.

The material that will be received at Bear Creek will be extensively characterized prior to its importation but not classified for disposal. Those materials destined for incineration and metal melting are not received in final form for disposal and therefore waste classification at this point in the process would be premature. Please refer to the March 27, 1995 Federal Register (page 15652) for discussion of manifesting to incineration facilities. Incinerator ash is arguably a new waste stream (a processor residual waste, as defined by specific licensing actions), as it is physically, chemically, and radiologically modified, relative to the input stream. The same considerations are applicable to slag and waste products resulting from metal melting activities.

Processing activities are performed in accordance with our Tennessee and Utah Radioactive Materials licenses. Routine operations at Bear Creek typically include adjusting mixtures of materials to achieve efficient processing. These adjustments include managing thermal properties (i.e., BTU content) of feed material for incineration and blending of metals to achieve desired molten metal bath chemistry for metals casting work. We also meter higher activity materials into our processes along with lower activity materials to control secondary waste and cast product dose rates, with resultant control over radionuclide concentrations. Such processing does not increase waste volumes.

NRC Question 5:

The application and December 5, 2007 responses are fairly consistent in identifying three major waste streams: 7000 tons of metal, 5000 tons of DAW, and 8000 tons of liquid, or wet, waste. (An average density of 40 pounds per cubic foot is used to estimate volume although these three waste streams individually differ significantly from that average density.) The material also indicates three distinct disposition pathways for the waste: recycle/reuse, disposal, and long-term storage. With the exception of metals, it is less clear with regard to the approximate percentage of each waste stream that ends up in each disposition pathway. Please provide clarification as to the likely disposition pathway of each major waste stream.

EnergySolutions Response:

In our December 5, 2007 letter, we estimated that approximately 33%, by weight, of the material will be recycled. Approximately 67% of the material, by weight, (metals, graphite, resins, DAW and liquids) will be processed using incineration, drying processes (drying ovens), and compaction for dewatering and volume reduction at the Bear Creek facility and of that amount, approximately 8%, by volume, will be disposed at the Clive

facility (metals, graphite, resins and DAW). Further processing details are provided in response to Question 6. As stated in Question 2, these values were best estimates and are not a committed maximum.

NRC Question 6:

Please describe the disposition of all Italian waste, including that which normally would be ascribed to the Bear Creek facility after processing. There are some conventions used in waste processing whereby the identity of the original generator disappears during processing because the waste becomes commingled (during incineration, e.g.). Please estimate the amount and method of Italian waste that will be dispositioned, including that which would normally be ascribed to the Bear Creek facility.

EnergySolutions Response

The following provides the estimated disposition paths and amounts for each of the different waste types. These values are best estimates and are not a committed maximum.

METAL

Most of the metal material will be recycled using the metal-melt process. This represents approximately 33-40% (by weight) of the Italy material. Negligible residual volumes result from this process that would need to be disposed at the Clive facility. None of the recycled metals will be released for unrestricted use. It will be beneficially reused within the nuclear industry.

Metals that are not suitable for recycling (copper, aluminum and etc.) will be volume reduced (by more than a factor of 4) by supercompaction or metal baler and transported to the Clive facility for disposal. This represents approximately 20-27% (by weight) of all the Italy material. The residual waste produced through this process that will be disposed at the Clive facility is approximately 3-5% (by volume) of all the Italy material. This value may decrease if more metal is found to be suitable for recycling.

GRAPHITE

The graphite will be repackaged and transported to Clive for disposal. This represents approximately 15% (by weight) of all the Italy material. The residual waste produced through this process that will be disposed at the Clive facility is approximately 3% (by volume) of all the Italy material.

RESINS

The resins will be incinerated or repackaged at Bear Creek facility and resultant waste will be disposed at the Clive facility. This represents approximately 5% (by weight) of all the Italy material. The residual waste produced through this process that will be disposed at the Clive facility is approximately 0.5% (by volume) of all the Italy material.



DAW

The DAW will be processed through incineration which will reduce the volume by more than a factor of 200. This represents approximately 15% (by weight) of all the Italy material. The residual waste produced through this process that will be disposed at the Clive facility is approximately 0.2% (by volume) of all the Italy material.

LIQUIDS

The liquids will be incinerated and negligible residual waste results that would need further disposal. This represents approximately 5% (by weight) of the Italy material.

NRC Question 7:

Please clarify whether any material that originates in Italy and imported into the United States will be disposed of in municipal landfills (non-NRC/non-Agreement State regulated) in the United States.

EnergySolutions Response:

None of the material imported from Italy by EnergySolutions will be disposed of in municipal landfills in the United States. Furthermore, none of the material will be disposed of at the Barnwell facility in South Carolina nor will any of the material be disposed of at the Bear Creek facility in Tennessee.

Please contact me at (801) 649-2114 should you have any questions concerning this matter.

Sincerely,

A handwritten signature in black ink that reads "Tye Rogers".

Tye Rogers
Sr. Vice President, Regulatory Affairs

cc: Brooke Smith and Carlotta Coates