SCEA S. COHEN & ASSOCIATES

April 28, 1998

Mr. Frank Costello Chief, Licensing Section U.S. Nuclear Regulatory Commission 475 Allendale Road King of Prussia, PA 19406

Subject: Request for Definition of License Category

Dear Mr. Costello:

In response to recent discussions with your staff, we are requesting on behalf of our client. Vesuvius Research, Pittsburgh, PA, a clarification on identifying the responsible agency and definition of license category involving the use of baddelevite ores containing Nat-U and Th above 0.05% by weight (500 ppm) to manufacture refractory components for use at steel mills. The following presents further details about the ores, process, and final product.

1. Material

It is currently planned to use different suppliers of mineral ores, some of which will contain U and Th above 0.05% by weight (500 ppm). The material is chosen for its refractory properties, the presence of U and Th is incidental and has no bearing on the selection of this material. U and Th will not be extracted nor otherwise isolated during the manufacturing process and use of the final product. It is currently planned to use materials under 0.15% (1,500 ppm), with a maximum possession limit of 90 kg of total Nat-U and Nat-Th in any combination.

The following tabulation summarized the concentrations of U and Th, and their decay products, in a typical sample.

Radionuclide Concentrations (pCi/g) ^(a)								
U-238	U-234	Th-230	Ra-226	U-235	Th-232	Ra-228	Th-228	
210	208	208	196	12.1	5.4	44.9	27.2	

(a) Baddeleyite ore at a concentration of 0.0677% by weight (677 ppm) total U and Th.

The results are illustrative of the types of materials that will be used, with the understanding that the concentrations of U and Th will vary depending upon the origin of the ores. Given the choice, our objective will be to use materials that are under the 0.05% by weight (500 ppm) limit. However, there are no assurances that exempted materials will be available when needed, hence, our interest in obtaining a license.





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2. Process and Facilities

The manufacturing process will take place in two stages. The first stage will be conducted at our plant, located in Tyler, TX, or at qualified third party suppliers. A license application is being prepared for our Texas facility. At this stage, the ores will be processed and manufactured into an internal component, called an insert. The major processing steps include mixing, drying, and cold pressing.

For the second and final stage, the components will be shipped to our Zelienople, PA, plant for assembly into the final product, called a gate assembly. The major processing steps will include machining and grinding, assembly and bonding into the gate assembly using refractory cements, and installation of an outer steel jacket. As a result, the insert becomes an integral part of the final component, which cannot be disassembled without breakage. Several types of gate assemblies will be made, with the following illustrating the range of U and Th concentrations in finished gate assemblies:

Insert Weight (kg)	Insert U and Th Conc. (ppm)	Insert Fractional Weight in Assy.	Overall U and Th Conc. in Assy. (ppm)	
3.3	750	0.115	87	
11.4	750	0.433	325	
3.3	1,500	0.115	173	
11.4	1,500	0.433	650	

The fully assembled components will be used in gate valves installed at the bottom of electric arc furnaces, ladles or tundishes to control the flow of molten steel. Accordingly, no one will be directly handling the component, except during its initial installation and removal. Once worn out, the plates will be removed from valves and discarded in regulated landfills by the users, i.e., steel mills or recycled by Vesuvius. An enclosed brochure provides more details (see flagged pages) about the product and its use at steel mills. Two drawings are also enclosed showing inserts within gate assemblies.

From earlier discussions, it was indicated that this material may be licensed under the "U and Th 0.05% by weight" provision, but it was not clear whether the license should be issued by the NRC or PADER. Our objective is to seek the least restrictive license for (a) possession and manufacturing and (b) distribution of gate assemblies with no restrictions, given that the amounts of materials and concentrations are lower than some of the existing exemptions and general licenses.

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Accordingly, we would like to obtain a clarification on this aspect and any specific guidance for preparing such an application. Also, note that we have filed a licence for this process and product with the State of Illinois for our plant located in Fisher, IL. Your cooperation will be most welcomed.

Should you have any questions, please do not hesitate to contact me at (703) 264-1117 or Mr. Martin Morris at Vesuvius Research for technical questions at (412) 788-4441, ext. 201.

Sincerely

Mr. Jean-Claude Dehmel, CHP Project Manager

cc: Mr. Ray Urciuolo, PADER, Harrisburg, PA Mr. M. Morris, w/o encl.

Enclosures: as stated.



