

December 2, 1986  
NRC/THI 86-111

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Docket No. 50-320

Mr. F. R. Standerfer  
Vice President/Director, THI-2  
GPU Nuclear Corporation  
P. O. Box 480  
Hiddletown, PA 17057

Dear Mr. Standerfer:

By letter dated August 27, 1986, you submitted a Safety Evaluation Report (SER) for use of a Plasma Arc Torch in which, you described your proposed activities related to cutting the upper fuel assembly end fittings. Based on our initial review of the SER and discussions between members of our staffs on November 20, 1986, we have determined that we need additional information to complete our review. We request that you respond to the enclosed questions.

Sincerely,

/s/ John A. Thomas for

William D. Travers, Director  
THI-2 Cleanup Project Directorate

Enclosure: As stated

cc: T. F. Denmitt  
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SURNAME	RJCook:wa	JAThomas	WDTravers			
DATE	12/2/86	12/2/86	12/2/86			

# ENCLOSURE

1. Some of the technical literature on plasma arc cutting and other forms of melting vaporization techniques indicate that nickel carbonyl  $[\text{Ni}(\text{CO})_4]$  may be generated during the cutting process. Provide the staff with additional information, including available analytical and experimental data, related to the formation of this highly toxic substance. Describe the potential health effects of nickel carbonyl and your proposed measures to protect personnel from this material.
2. During plasma arc cutting, temperatures of 20,000 to 50,000°F may be achieved in the central zone of the plasma. At these temperatures, material being cut is vaporized. What is the potential for heavy metal (including fissile materials) poisoning of personnel exposed to these vapors, and what protective measures will you employ to prevent this.
3. During the November 20, 1986 meeting you stated that you planned to store the inert gases (nitrogen and carbon dioxide), needed to support plasma arc cutting, in the reactor building. Describe the quantities and locations of the stored gases and discuss the safety implications of an accidental release of the gas into the reactor building atmosphere. In addition, describe the hazards and protective measures to be employed related to oxygen displacement by the gases used during plasma arc cutting.

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