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

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MEMORANDUM FOR: Vandy Miller, Assistant Director
for State Agreements Program
State Local and Indian
Tribe Programs, GPA

FROM: John E. Glenn, Chief
Medical, Academic and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: NEUTRON PRODUCTS, INC., (NPI) ACCOMPANIMENT
ON SEPTEMBER 28 and 29, 1989.

Pursuant to your request of Mr. Glen Sjoblom, Mr. Steven Baggett of my staff accompanied the State of Maryland on a partial inspection of an Agreement State licensee's (NPI's) source fabrication facility located in Dickerson, Maryland. NPI has made some improvements to the program including hiring a health physics consultant, installing a portal monitor, making procedural changes, and upgrading worker training requirements. These improvements emphasize identifying contamination before it leaves NPI or has left NPI's control. We believe that NPI additionally needs to address the cause of the problem, specifically the amount of contamination and the type of operations that cause contamination in the Limited Access Area. We, therefore, support the State of Maryland's position not to allow NPI to perform source melt operations until several radiation safety related items are clearly addressed by NPI in a formal license amendment request.

Mr. Baggett has enclosed some of his suggestions relative to NPI for your use or consideration by the State. If you have any questions on these suggestions, please contact him at Ext. 20542.

John E. Glenn

John E. Glenn, Chief
Medical, Academic and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: As stated

cc: GLSjoblom, NRC
JWhite, NRC
AJacobsen, State of Maryland
CTrump, State of Maryland
JRansihoff, NPI

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Suggestions relative to NPI

1. During the visit the acting Radiation Safety Office (RSO) was on-duty. Based on discussions with this individual, there is a need to have a central place to keep all records and procedures associated with the radiation protection program. Further there should be be clear lines or designation of authority established to insure that all NPI personnel are aware who is functioning as RSO for the day. NPI could post a sign at the entrance to the Limited Access Area (LAA) to indicate safety-related information such as who is the on-duty RSO.

2. NPI and its consultant should evaluate and submit to the State an amendment request describing actions to reduce the personnel exposure commitment of 10 person-Rem per melt campaign (at 30 sources per campaign, this equates to 0.33 person-Rem per source).

This evaluation should include a cost-benefit analysis of worker and environmental exposure of using the melting process versus the use of other engineering improvements to control contamination inside the hot cell at or near the point of origin. Although NPI is against using minipellets, this alternative should be considered.

3. The current arrangement permitting review of the consultant's audit report by NPI prior to its going final appears to compromise the independency of the evaluation. The state may want to redirect this activity by getting copies of any reports the consultant has submitted to NPI either as a draft or final and of any analysis or reports issued by the internal review committee.

4. The relative locations of the portal monitor and phones in the transition area make it very easy to bypass the monitor and risk possible contamination of the area as you leave the LAA. This was demonstrated when the acting RSO walked directly by the monitor to setup the counting sequence. There should be an evaluation made of this area to determine if improvements in location of phones or equipment or administrative controls need to be implemented.

5. I have several concerns about the ventilation and exhaust filter system in the LAA. Although NPI representatives appear to have an understanding of the ventilation and exhaust system at the facility, the 800 CFM flow rate seems low for the activities that are being performed in the hot cell. NPI's or its consultant should perform a through review of what flow rate is necessary considering the activities and the partial size of aerosols generated in the cell. Based on assumptions of hot cell size, partial size of the aerosol and volume of air flow, I calculate a needed air flow rate of about 1400 CFM to obtain the necessary linear feet per minute.

The dose rates (several R/hr) on the hepa filter bank on the second floor indicates a need to establish a method to contain most if not all the contamination near its source inside the hot cell. Assuming that a hepa filter change would take about 20 minutes, and based on the dose rates indicated by NPI personnel, a worker would receive about 1 R to perform this operation. Because it is far more difficult to establish procedures to shield and change a hepa filter with R per hour dose rates, NPI should consider changing the hepa filter more often based on a lower dose rate.

NPI should consider changing the current hepa filter before the dose rate increases significantly and possible using a mock-up filter bag-out box in a "clean" area to hone the skills needed to quickly and remotely change the hepa filter.