

*George Anastas*

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DNF SAFETY BOARD

Defense Nuclear Facilities Safety Board  
625 Indiana Avenue NW, Suite 700  
Washington, DC 20004-2901

Subject: June 7, 2017 Public Hearing: Understanding the Safety Posture of the Plutonium Facility at Los Alamos National Laboratory

Thank you for holding the Hearing at a convenient location and at a convenient time for interested members of the public to attend and participate.

I appreciate the opportunity to present several comments at the June 7, 2017 Hearing. I am encouraged by the DNFSB staff Reports and the open and often probing questions by the Board. The few minutes I had to speak did not provide enough time to fully articulate a number of key points regarding PF-4. That facility was constructed in about 1978 and has operated for many years. PF-4 is an important national defense facility and the people that work there are an irreplaceable resource. The following concerns and comments focus upon the facility and the people that work at PF-4.

*Criticality Issues*

I spent several days reviewing available reports and information regarding criticality issues at LANL and PF-4. LANL and specifically PF-4 has managed to dodge the silver bullet (criticality near misses) a number of times during the past 5 or so years. There are a plethora of incidents which give me significant concern. Following are but a few of the items that require attention.

- a. There are or may be unknown liquids in discarded in process equipment and piping.
- b. Material Unaccounted For (or MUF) in old containers, filters, piping, ventilation and facility appurtenances (sinks, traps, drains, sumps, etc.).
- c. There was no discussion at the Hearing of measurement error when quantities of Pu-239 were discussed at the Hearing. Some identification of measurement errors in the inventory at PF-4 should be provided. With measurement errors and MUF, there may be considerably more than 1.8 tonnes of Pu-239 on the first floor of PF-4.
- d. There probably are a number of Pu-239 containers that are not water tight. It is not evident how many containers meet the “water tight” criteria. Accordingly, fire water intrusion could very well increase the likelihood of criticality.
- e. There are a number of instances where personnel violated posted quantity (mass/gram) limits posted on gloveboxes and carts. These types of human factor engineering errors are inexcusable and are harbingers of events with serious consequences.
- f. There is a continued apparent lack of Criticality Safety Engineers (and related reduction of walk downs) assigned to PF-4. Criticality Safety Engineers, safety related personnel, other subject matter specialists and the safety culture of the personnel at PF-4, are important ingredients for safe and effective operation of PF-4.

### Documented Safety Analysis (DSA)

It would not be imprudent for the Board staff, or other independent qualified group (perhaps appropriate staff of the Nuclear Regulatory Commission), to critically evaluate the reasonableness of the assumptions used in the accident scenarios in the DSA. Some of the assumptions that might be scrutinized could be: particle size distribution of the particulate release for each scenario, deposition velocity, chemical

form of the Pu-239, clearance half times of the particulates (F, M, S, etc.), subsequent criticality because of fire water intrusion, population dose to organs (in addition to whole body dose), uncertainties in dose evaluations, meteorological assumptions (Los Alamos meteorology is rather unique because of high desert), temperature inversions (generally at night), specific  $\chi/Q$  not using average data, etc.

### Probability of a Seismic Event

The probability of a design basis seismic event for the DSA was quoted several times at the Hearing of 1 event in 10,000 years (in the context that the event would never occur in our lifetimes, 10,000 years is a long time). Risk, in general terms, is the likelihood of specified undesirable events occurring within a specified period or in specified circumstances arising from the realization of a specified hazard. The probability of a tsunami seriously damaging the reactors at Fukushima was exceedingly small. Things that never happened before, or only happened once in recorded history, are always possible.

Note the Tsunami stones on the coast in Japan and the records of the 870 Jogan earthquake. Note the probability of a salt truck fire at WIPP, or a drum containing 9 grams of Pu/Am detonating in the WIPP underground, contaminating large areas in the underground, closing the WIPP for many years and costing millions of dollars in direct costs.

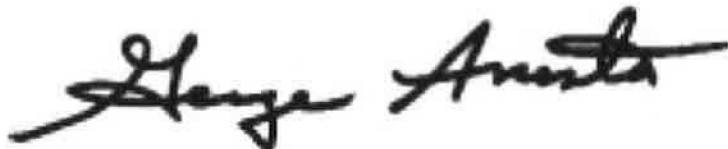
A postulated event of 1 in 10,000 years could occur this year or next year or several years in a row. Probabilistic risk assessment is a valuable tool, but its limitations must not be hidden, particularly from the public.

Thank you for the opportunity to present these comments. Safe operations at PF-4 is not only important to national security efforts but to the safety of the people that work at LANL and the public.

I appreciate the independent efforts by DNFSB and the DNFSB staff in their diligent efforts on behalf of safety at DOE facilities.

I can be contacted at the letterhead address, at [REDACTED] or by telephone at [REDACTED].

Sincerely,

A handwritten signature in black ink that reads "George Anastas". The signature is written in a cursive style with a long horizontal flourish at the end.

George Anastas  
PE, CHP, FHPS, BCEE, FARPS