



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 17, 1994

MEMORANDUM FOR: The Chairman
Commissioner Rogers
Commissioner Remick
Commissioner de Planque

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: UPDATE ON ASSESSMENT OF NEUTRON PRODUCTS, INC. (NPI)

My memorandum of September 27, 1993, summarized a meeting between the Office of State Programs, Region I, and the Maryland Radiation Health Program staffs regarding the conduct of a joint Maryland/NRC inspection at NPI. The purpose of this memorandum is to keep the Commission informed of the results of the inspection and the health and safety assessment of the NPI program. This assessment also provided insight into the effectiveness of the Maryland Radiation Control Program as it relates to NPI.

The Office of Nuclear Material Safety and Safeguards (NMSS) provided a Senior Level manager to coordinate the planning of NRC's role in the inspection, to be the liaison with the State of Maryland, and to coordinate NRC input into the resultant inspection report. The team inspection was led by a State of Maryland inspector; two other State inspectors along with four NRC inspectors comprised the team which conducted an onsite inspection October 18-22, 1993. The Region I Mobile Radiological Measurements Laboratory was also used. The NRC manager participated in a preplanning meeting, two evening meetings with the team during the course of the inspection, and in the exit meeting with the licensee. Arrangements were also made for an aerial overflight survey of the NPI facility and of the area where it discharges its contaminated waste into the sanitary sewer system. This survey was conducted during the period of November 1-12, 1993. The State's inspection report, which includes the NRC team member findings, was issued on January 20, 1994, and a copy was placed in NRC's Public Document Room. The preliminary results of the aerial overflight survey were included in that report, although the contractor's draft report of this survey will not be issued until the end of March.

The planning discussions with the State of Maryland and the inspection itself provided several insights into the NPI and Maryland programs. The general conclusion from this effort is that no issues of immediate health and safety significance were identified at NPI. However, several weaknesses in the NPI program were identified, which need to be addressed. Set forth below are some of the key observations and findings of the inspection:

- NPI is a unique licensee in the scope of its operation. In addition to the cobalt source manufacturing operation, which was the primary focus of this inspection, the licensee operates two large irradiators (750,000 Curies and 2,000,000 Curies), and also produces a chemical which is sold

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commercially for use in the treatment of sanitary sewerage.

- It appears that the State has been effective through the introduction of requirements related to worker practices and monitoring equipment in reducing worker exposure and contamination in the hot cell area of the plant and in reducing the tracking of contamination by workers out of the plant. (It should be noted that the State has expended considerable resources on NPI. Since April 1991, the State estimates that it has expended more than two person-years of effort on all aspects of licensing, inspection and enforcement; this includes 97 person-days devoted to actual onsite inspection.)
- Releases of airborne radioactive materials through the hot cell exhaust system, and of liquids into the sanitary sewer system are well within the State's equivalent of Part 20 limits. Samples taken during this inspection at the Blue Plains Sewerage Treatment Plant which processes the liquid waste showed no evidence of cobalt-60.
- The matter of greatest concern is the storage of dry active waste in such forms (some in plastic bags, some of which were ripped), and quantities (about 750 Curies) that it contributes to high external radiation levels within the restricted area and at the restricted area fence line, and to contamination both on and off the licensee's property. While there is agreement between the licensee and the State that waste storage is a problem, there has not been agreement in the past on its resolution. However, a recent court settlement between the State and NPI resulted in an agreement as to how to resolve this issue. The settlement provides for the use of an independent health physicist, selected by the State, but paid for by NPI, to review plans for a temporary storage area (to be submitted by March 30, 1994), and for an enclosure of the "courtyard", which will include a storage facility, a waste processing room and compactor (to be submitted by June 30, 1994). The settlement sets times for review of this information, and provides for the resolution of any conflict that may arise between NPI and the State. NPI has 12 months to complete construction of this facility after the plans are approved and they have obtained the necessary building permits.
- Isolated instances of low-level offsite contamination continue to occur which demonstrates poor health physics practices on the part of the licensee. The contamination apparently results from material windblown out of the licensee's "courtyard," a contaminated open but fenced area outside of the hot cell and waste storage areas, and from wind or waterborne materials from a "dry pond" which receives water drainage from the courtyard area. Surveys and samples taken during the inspection showed isolated spots of contamination in a neighbor's field in the predominant downwind area from the plant, and near the plant from apparent liquid runoff (up to 410 picocuries/gm). The levels are consistent with those found in prior State and licensee surveys. The settlement agreement also addresses the "dry pond" area by directing that NPI construct a fence around the area by March 1, 1994, and by authorizing NPI to build a sediment removal pool within the area.

- The aerial overflight did not identify any contamination outside of about a 1000-foot radius around the plant, including the area where waste is discharged into the sanitary sewer system. Within the 1000-foot radius, the overflight was unable to distinguish whether or not there was contamination because of the direct radiation readings from the plant. The areas of contamination identified by ground surveys were generally within this 1000-foot radius. It should be noted, however, that it is not clear that isolated areas of such low level contamination would have been identified by the overflight if they existed outside of this area because of the sensitivity and geometry of the counting system.
- The radiation safety officer's knowledge of and involvement in the plant radiation safety program is limited. Knowledge of internal dose assessment appears weak, although NPI has called in outside help when there have been indications of problems. The Company President is fairly knowledgeable of radiation safety aspects of the program, but has a high threshold as to what he perceives as a radiation safety problem. Attempts to hire a full time health physicist have been thwarted, according to the licensee, due to uncertainties in the Company's future because of the court trial which had been pending to address proposed violations and civil penalties brought by the State against NPI, and because the Company is in bankruptcy.
- There is a great deal of antagonism between the licensee and the State, and this likely has hindered the resolution of some of the problems. The NPI President stated during the exit meeting that the State is not competent to evaluate his proposals for resolving the waste issue or to evaluate his program for monitoring offsite releases through the "dry pond." The NPI President believes the State improperly placed on him license conditions which have no technical merit. This issue along with the court case mentioned above, which addressed several violations of these license conditions, appeared to be the basis for much of the ill will that exists. Regarding the court case, the judge issued a Memorandum Opinion and Order on December 29, 1993 which included a summary judgement in the State's favor on 17 of the 24 violations at issue. A subsequent settlement agreement provides for NPI to pay a \$75,000 fine plus interest over the next five years, and for a cooperative plan, as described previously, to address both the waste storage and contamination issues. The settlement provides for an additional \$125,000 fine in the event of a default or breach of the agreement.
- Radiation levels at some locations at the restricted area fence line continue to exceed the 500 mR/year limit which is on the license. Contamination levels outside the restricted area also exceed the limits in the license. The State has not been successful in assuring compliance in these areas. However, these issues were a part of the recently resolved court case, which may have precluded further action by the State until final resolution was achieved through the court system.

- The implementation of the requirements for the new Part 20 will require additional effort on the part of the licensee. Areas which need to be addressed are determination of total effective dose equivalent for persons outside the restricted area, determination of solubility of material released to the sanitary sewer system, evaluation of worker doses from internal intakes, and the ALARA program.

In summary, it appears that Maryland has had some success with improving the safety of operations at NPI, and that the recent settlement provides a mechanism for resolution of several additional issues. However, considering the unique aspects of this operation, the extended time required to complete the physical changes to address waste storage and contamination control as provided for in the settlement, the weaknesses that exist in the management, the additional regulatory problems that will be encountered with the new Part 20 requirements, and the longstanding strife between the licensee and the State, I have determined that the staff needs to take a much more active role in its oversight of the Maryland program as it relates to the NPI operation. I plan to have the Director of State Programs meet with State officials for the express purpose of addressing the concerns raised in the inspection and pursuing with them a long term strategy for correction of outstanding problems with NPI, including NRC's role in the resolution of these issues. This is to be a cooperative effort which will be mutually beneficial to both NRC and the State. Staff plans to closely monitor the progress that the State of Maryland makes in regard to improving the safety of operations at NPI and will alert the Commission to any problems that develop in this regard.

Original signed by
James M. Taylor

James M. Taylor
Executive Director
for Operations

cc: SECY
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