

RAS 6949

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Emile Julian
Assistant for Rulemakings and Adjudications
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

SUBJECT: *Original Stay Declarations in CFC Logistics Licensing
Proceeding, Docket No. 30-36239*

Dear Mr. Julian,

Enclosed please find the originals of the following declarations:

Declaration of Kimberly Haymans-Geisler in Support of Petitioners' Motion for a Stay
(September 2, 2003);

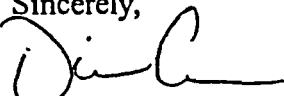
Declaration of Marvin Resnikoff, Ph.D. In Support of Petitioners' Motion for a Stay
(September 4, 2003);

Confidential Supplement to Declaration of Marvin Resnikoff, Ph.D. In Support of
Petitioners' Motion for a Stay (September 4, 2003).

Please note that Dr. Resnikoff's supplemental declaration is marked confidential,
because it may contain proprietary information.

I regret that I was unable to file the original declarations when I filed the stay motion,
because I had not yet received them.

Sincerely,


Diane Curran

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UNITED STATE OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
CFC Logistics, Inc.)	Docket No. 03036239
)	ASLBP No. 03-814-01-ML
Materials License Application)	

DECLARATION OF MARVIN RESNIKOFF, Ph.D.
IN SUPPORT OF PETITIONERS' MOTION FOR A STAY

Under penalty of perjury, I, Dr. Marvin Resnikoff, hereby declare that:

1. I am a physicist with a Ph.D. in high-energy theoretical physics from the University of Michigan and also the Senior Associate of Radioactive Waste Management Associates (RWMA), a private technical consulting firm based in New York City. I have researched radioactive waste issues for the past 29 years and have extensive experience and training in the field of nuclear waste management, storage, and disposal. RWMA works, among other areas, primarily on three subjects: transportation and storage of radioactive waste and materials, radiation induced injuries, and decontamination and site remediation of radioactively contaminated facilities. A copy of my resume is attached to this declaration as Exhibit A.
2. I have considerable training and experience in the field of risk assessment involving nuclear and hazardous facilities, serving as an expert witness in numerous personal injury cases in which I estimated radiation doses and the likelihood these exposures caused cancer. These cases involved uranium mining and milling, oil pipe cleaning, X-rays, thorium contamination and other issues. This work involved the use of computer codes, such as CAP88PC, RADTRAN, RESRAD, RISKIND, MILDOS and HOTSHOT, and spreadsheets employing dose conversion factors, to estimate radiation doses.
3. A paper on decommissioning reactors I wrote in 1976 (*Environment*, December 1976) was the first to show that reactors would remain radioactive for hundreds of thousands of years. The importance of our discovery was noted by *Science* magazine in 1982, which is attached hereto as Exhibit B. As part of our work analyzing radioactive waste shipments to low-level waste facilities and waste impacts of the nuclear fuel cycle, I have stayed up-to-date on the decommissioning literature, including more recent NRC reports.. I reviewed decommissioning reports for the Rancho Seco reactor in California, the Big Rock Point reactor in Michigan, the Yankee Atomic reactor in Rowe, Massachusetts, and the Connecticut Yankee reactor in Haddam Neck, Connecticut.
4. In addition RWMA has conducted technical analyses for public interest groups and local governments at each of the proposed low-level waste disposal facilities across

the country, including Martinsville (IL), S. Windsor (CT), Chatham County (NC), Hudspeth County (TX), Ward Valley (CA) and Boyd County (NE). In the process of conducting these analyses, we have examined and used the computer programs MODFLOW, PRESTO-CPG and IMPACTS, used to estimate groundwater flow and risk due to radioactive materials. I served as project manager and focused on the risk assessment sections of our reports.

5. RWMA is involved in several major personal injury cases involving radiation due to uranium mining and milling operations, and oil pipe cleaning operations (NORM). We also serve as technical advisors to the States of Utah and Nevada on issues involving transportation, handling and storage of irradiated fuel.
6. I have previously assisted a local group in Dickerson, MD regarding Neutron Products, Inc., a company that processed Co-60 into specific forms for irradiation devices.
7. I am one of the Petitioners' expert witnesses in support of its petition to intervene in this hearing, which relates to the Materials License Application proposed by CFC Logistics, Inc. for a Genesis Irradiator in Milford Township, Pennsylvania. I participated in the drafting of Petitioners' issues of concern.
8. To prepare this affidavit, I reviewed CFC Logistics' Materials License Application, and other filings in this NRC docket, including the Staff's Request for Additional Information. I am also familiar with NRC regulations and guidance documents related to this application.
9. In my best professional judgment, residents of Milford Township and the petitioners would suffer irreparable harm if the NRC license were granted. This declaration discusses the basis for this conclusion.

10. Security. In a public meeting held on August 21, 2003, the NRC stated that it has not yet required CFC Logistics to implement new security measures that the NRC is requiring as a result of the September 11, 2001, terrorist attacks on the World Trade Center and the Pentagon. A partial transcription of that meeting is attached to Petitioners' stay motion. At the meeting, the NRC Staff also stated that CFC Logistics would not be required to implement these new measures until December. It is well-known that Cobalt-60 is an attractive target for terrorists, because it can be used to make dirty bombs. It is also well-known that in general, nuclear facilities are a target of the Al Qaeda organization. Cobalt-60 irradiation facilities are a particularly attractive target, because of their relatively low level of security. If Cobalt-60 were stolen from the proposed facility, or if the facility were attacked, Cobalt-60 could be released into the environment, causing significant adverse health effects and spreading contamination that would be expensive to clean up. Therefore, in my professional opinion, allowing the CFC Logistics facility to operate, before these new security measures have been implemented, poses an unacceptable risk of irreparable injury to the neighbors of the proposed facility. It is also possible these

new security measures are inadequate and it is not clear if they also pertain to transportation, or just to fixed facilities.

11. **Loading and Unloading Equipment and Procedures.** RWMA serves as a technical consultant to the States of Utah and Nevada regarding the transportation, handling and storage of irradiated reactor fuel. The safety issues raised by handling and storage of Co-60 are similar to the safety issues raised by handling and storage of irradiated reactor fuel.
12. Based on my experience with loading and unloading irradiated fuel, this stage is the most precarious and susceptible to a major accident if the equipment, training and emergency procedures were not up to this difficult task. For similar reasons, I believe the loading and unloading of Co-60 at the proposed irradiation facility will be precarious and susceptible to a major accident. According to the license application, a shipping cask containing 200,000 Ci of Co-60 sources would be inserted into the pool. Sources would be removed and placed underwater on one side of the pool, away from the cask. The plenum would be removed before this operation. As the shipping cask, which could weigh upwards of 25 tons, was removed from the pool, it could drop onto the sources, seriously contaminating the pool water. This contamination would have to be removed with ion exchange columns that would become extremely radioactive. The steel-liner of the pool would become radioactive. Some of this radioactivity could be released to the sanitary sewers and the air. The application contains no details about the type and weight of the cask, how the cask is unloaded from the trailer bed and how the cask is attached to the crane and lowered into the water.
13. In 1980 a shipping cask containing irradiated fuel from the Connecticut Yankee reactor overheated, and contaminated the Battelle Columbus Laboratory fuel pool with fission products and Co-60. The contamination in the pool set off the air monitors, and led to major radiation exposures. On the basis of this accident, on behalf of the Sierra Club, I petitioned the NRC to inert all transportation casks, so the contents would not oxidize. While the petition was ostensibly denied, the NRC did order all shippers to inert shipping casks with helium or nitrogen. The physical and chemical properties of irradiated fuel are admittedly different from Co-60 sources at CFC Logistics, but the possibility of radioactivity becoming airborne in an accident is similar to what may occur at CFC Logistics. If the Co-60 sources were damaged in an accident, Co-60 could become airborne and be released to the external environment.
14. To protect against a cask drop at nuclear reactor fuel pools, the cranes at nuclear reactors are designed to be single failure proof. Further, at nuclear reactors, the crane is designed such that shipping casks can never be moved over irradiated fuel. A cask drop at a nuclear reactor is therefore extremely unlikely. In contrast, there is no indication in the CFC Logistics license application that the crane used to lower the shipping cask into the pool is single failure proof, or that a cask could not be moved over the Co-60 source in the pool. If the crane were to fail for any number of causes (electricity outage or earthquake, both of which have happened in the last

two weeks)¹, a cask drop could break the sealed source containers and expose the Co-60 to the pool water, similar to the Battelle accident.

15. A cask drop accident could occur during loading of Co-60 into the proposed facility. It could also occur during removal of the sources from the pool. If the sources were bent out of shape it might not be possible to return them to the shipping cask for removal.
16. As far as can be ascertained by the application, the crane is not designed to stop where the sources are located since it is the same crane used to move product over the entire pool.
17. In my opinion, a cask drop accident could seriously contaminate the pool and lead to water contamination and air contamination that could be ventilated to the external environment. Given that some residents live as close as a quarter mile from the proposed facility, the resulting contamination could have significant adverse effects on public health. It would also be very expensive to clean up. Similar to operations at Neutron Products Incorporated (NPI) in Dickerson, Maryland, where Co-60 material was shaped to fit different irradiators, Co-60 released to the environment could lead to a significant direct gamma dose, and would be expensive to decontaminate. At NPI, despite the presence of HEPA filters to capture particulates, Co-60 was found off-site; the direct gamma dose rates were five times NRC regulatory limits. Therefore, I consider the potential for a cask drop accident to pose a serious risk of irreparable harm.
18. The issue of water contamination is a serious matter at the proposed irradiation facility. The water table at the proposed irradiation facility is high. While the foundation was being excavated for the "cold storage facility," "approximately 4"-8" of ground water (appeared) in (the) bottom of (the) hole."² Should an accident occur that causes a leak in the pool, such as a shipping cask drop that cracks the pool liner and concrete, contaminated water from the pool would immediately enter groundwater. Many homes in the vicinity of the proposed irradiator have private wells that tap into the local aquifer.
19. Further, the application has no emergency procedures for accidents that may occur during loading and unloading sources. This is contrary to 10 CFR §36.53(b)(3) and (4). The emergency plans, such as they exist, call for phoning the radiation safety officer (RSO), who may or may not be located in Quakertown. The RSO may be located in NJ, at other irradiation facilities, where she may also serve in a similar capacity. It is unlikely that the RSO could direct the emergency response effectively from a remote location. In addition, the application contains no emergency

¹ During the week of August 11, 2003, a failure in the grid system caused the largest power blackout in history. Electric power was lost to large portions of the northeastern United States and eastern Canada, and 50 million people were without electricity. On August 26, 2003, a magnitude 3.8 earthquake shook eastern Pennsylvania and portions of New Jersey.

² Field Inspection Report, Cowan Associates, Inc. (February 12, 2003). This document was attached to CFC Logistics' February 25, 2003, license application, and is available on ADAMS.

procedures for remedying a cask drop accident. There are no phone numbers for police, or fire and ambulance; nor is there any indication that they would know what to do, as there is no provision for training or drills, contrary to 10 CFR §§36.51(d)(6) and (g).

20. A drop of a 25-ton shipping cask or an earthquake could also damage the pool lining, causing a loss of shielding water. This would greatly increase the radiation dose rate. To put the amount of radiation in each source in perspective, a person standing one meter from an unshielded one curie source of Co-60 would receive a dose of 1.37 rem/hr, using specific gamma-ray dose constants.³ That is, each 17,000 unshielded curie source yields an LD50 dose in one minute. The Genesis irradiator can hold up to 256 sources, or 4.35 million curies⁴. This accident is not discussed in the application.
21. **Loss of electricity.** Contrary to 10 C.F.R. §36.53(b)(6), the licensee has no emergency procedures for accidents involving a prolonged loss of electricity. Without clear measures for recovering from a prolonged loss of electricity, the safety of neighboring members of the public cannot be assured.
22. The licensee does not appear to have an emergency electric generator in case of an extended power failure.
23. Moreover, the license application does not analyze the range of accidents that could be caused by a loss of electricity. While the application does discuss the possibility of the loss of electricity supply in terms of overheating of sources, other credible accidents are not considered. For instance, movement of product near the plenum containing Co-60 sources occurs under bells inserted under water; the bottom of the bell is open, but water cannot enter due to a compressed air supply. In the event that power is lost while a bell is underwater, the product could become water-logged and distribute itself within the pool, thereby clogging the filters and the water circulation system. In the changeover to new filters, Co-60 could bypass the containment system and be released as wastewater. The applicant does not discuss this potential accident, or any procedures for recovering from this loss of electricity accident in which product floats in the pool.
24. Moreover, in discussing the possibility of the loss of electricity supply in terms of overheating of sources, the application fails to provide specific information regarding the heat rate and the number of hours until the source cladding degrades. The application does contain discussion of the heat rate for one source in a pool of water and for 145,000 Ci in a shipping cask, but not for one million curies of Co-60 in a plenum, the situation at CFC⁵. The application should contain detailed information on how rapidly the sources will heat up and the consequences of overheating. This information is needed to know how long the electricity may remain off before a

³ Shleien, B et al, *Handbook of Physics and Radiological Health*, Williams and Wilkins, Baltimore, 1998, Table 6.2.2

⁴ The applicant has requested a license for one million curies.

⁵ Letter from RN Stein, Gray*Star to S Turner, CFC Logistics (April 18, 2003).

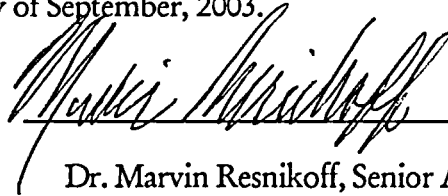
serious accident ensues. In the event of overheating, the cladding around the sources could fail, contaminating the air and overloading the HEPA filters. Co-60 could be released to the external environment.

25. **Damaged air line.** Contrary to §36.53(b)(4) and §36.63(a), the licensee has no emergency procedures for accidents involving a break in the compressed air line. This would allow water to enter the bell, and would degrade the product, similar to the discussion in Para. 23.
26. **Transportation accidents: safety and environmental impact.** Cobalt-60 sources, in transit from Canada or Russia to the CFC Logistics plant, would not be well-protected from a terrorist attack. The NRC does not require armed escorts for Co-60 sources. Yet, potential saboteurs have significant fire power at their disposal. The TOW2 and MILAN anti-tank missiles have a range of one km and can penetrate one meter of steel, far more steel and lead than the walls of a shipping cask. The newer Russian Koronet missile, used by Iraqi armed forces, can penetrate 1.2 meters of steel and can be aimed precisely at a distance up to 5 km. These weapons have the ability to penetrate a shipping cask and disperse its contents. NUREG-0170, that the applicant cites in supporting its safety assurances, is silent on these safety and security issues.
27. A Cobalt-60 cask shipment, attacked within a city, could cause major environmental pollution and cancer fatalities. Local residents would clearly have a greater risk than other persons: while shipments could leave Canada or Europe by a number of routes, once they get close to the facility, the route options are more limited. Such an accident would subject the residents of Milford Township to irreparable harm. In addition to significant adverse health effects caused by contamination, such an accident would have significant economic impacts, and would seriously disrupt the affected communities. Based on an analysis done for the State of Nevada, it is reasonable to estimate that the decontamination due to an accident involving a spill of 200,000 curies of Cobalt-60 costs could easily exceed \$1 billion.
28. The environmental impact of shipping Co-60 sources has not been seriously investigated by the applicant, nor the NRC, and is a major deficiency of the application. The applicant downplays the possibility of a transportation accident and security concerns involving transportation, citing a 1976 environmental report by the Nuclear Regulatory Commission, NUREG-0170. But this study, which was inadequate in 1976, is now hopelessly out of date in all relevant respects.
29. **Decommissioning Funding and Liability Insurance.** The applicant has offered the minimum \$75,000 financial assurance for decommissioning, but this would clearly be inadequate if a major accident were to occur. Nuclear reactors are insured for billions of dollars under Price-Anderson, but CFC Logistics does not appear to be insured for credible accidents. Therefore, it does not appear that CFC Logistics will have sufficient funds to clean up after any accident that may occur.

30. In my best professional opinion, due to all the problems in CFC's application as discussed above, the operation of the proposed CFC Logistics irradiator poses serious risks to the health and safety of the surrounding public, because CFC Logistics, Inc. has not provided for adequate protection against accidents at the facility. Local residents would suffer significant and irreparable harm if a major accident were to occur.
31. If the petitioners' concerns are admitted for litigation, I would testify regarding my opinion in support of their conclusions. The technical facts and analyses described above provide an abstract of the testimony I would give, based on the information that has been furnished to date. I would expect to be able to expand upon and refine my testimony, after having an opportunity to review materials produced by CFC and the NRC Staff in discovery.

I declare under penalty of perjury that the factual information provided above is true and correct to the best of my knowledge and belief, and that the professional opinions expressed above are based on my best professional judgment.

Executed on this 4th day of September, 2003.



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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION


BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
CFC Logistics, Inc.)	Docket No. 03036239
)	ASLBP No. 03-814-01-ML
Materials License Application)	
)	

**DECLARATION OF KIMBERLY HAYMANS-GEISLER
IN SUPPORT OF PETITIONERS' MOTION FOR A STAY**

Under penalty of perjury, I, Kimberly Haymans-Geisler, declare that:

1. My name is Kimberly Haymans-Geisler. I am a member of Concerned Citizens of Milford Township.
2. On August 21, 2003, I attended a public meeting at Quakertown High School in Quakertown, Pennsylvania. The meeting was sponsored by the Staff of the U.S. Nuclear Regulatory Commission ("NRC"). The subject of the meeting was the NRC's proposal to issue a license to CFC Logistics, Inc. for a food irradiation facility in Milford Township, Pennsylvania.
3. The meeting was not officially transcribed by a court reporter, but was recorded on videotape by Kirk Rohn of GreenSky Recordings, who provided me with a copy.
4. Attached to this Declaration is a partial transcript of the meeting, which I prepared from the videotape. To the best of my knowledge and belief, the transcript contains a correct representation of the portions of the meeting that I transcribed.


Kimberly Haymans-Geisler

September 2, 2003

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