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ADJUDICATIONS STAFF

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

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| In the Matter of | ) | |
| Pa'ina Hawaii, LLC | ) | Docket No. 030-36974 |
| | ) | |
| Materials License Application | ) | |

APPLICANT PA'INA HAWAII, LLC'S ANSWER TO
REQUEST FOR HEARING BY CONCERNED CITIZENS OF HONOLULU

NOTICE OF APPEARANCE

CERTIFICATE OF SERVICE

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SECY-02

TEMPLATE= SECY-037

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I. INTRODUCTION.

Pa'ina Hawaii, LLC ("Pa'ina") is an Applicant for a Materials License to operate an irradiator in Honolulu, Hawaii. Pa'ina hereby Answers the October 3, 2005 Request for Hearing by Petitioner Concerned Citizens of Honolulu ("Petitioner"). Pa'ina requests that Petitioner's Contentions and arguments be deemed inadmissible, and/or dismissed.

Petitioner makes two general types of challenges to the Application submitted by Pa'ina:

Petitioner challenges the NRC's "categorical exclusion" of Pa'ina under its rules based on the National Environmental Policy Act's ("NEPA") requirements for an environmental impact statement ("EIS"), or an environmental assessment ("EA").[1] The

[1] "Categorical exclusion" means that the NRC regulations, which are "front-loaded" during development to consider all relevant environmental and safety

categorical exclusion is contained in the notice which was published in the Federal Register August 2, 2005 (70 Fed.Reg. at 44,396). As explained below, that challenge ought to be deemed inadmissable forthwith.

Petitioner's second type of challenge alleges twelve (12) supposed "unusual" problems arising out of Pa'ina's Application, denominated "Areas of Concern." Petitioner apparently hopes that its "Areas of Concern" will create "special circumstances" not contemplated by the NRC's regulations.

There are no "special circumstances" surrounding Pa'ina's Application, as routine as it is. Further the Petitioner's use of "special circumstances" do not meet the qualifications of 10 C.F.R. Sec. 51.22 (c): "Special circumstances include the circumstance where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102 (2) (E) of NEPA". Consequently, Petitioner cannot make any admissible contentions, and no Environmental Impact Statement, Environmental Assessment, or hearing is necessary.

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concerns, have already incorporated all the relevant environmental and safety concerns and applied them to Pa'ina's Materials License Application.

All of Petitioner's contentions should be deemed inadmissible, and the entire Request for Hearing ought to be dismissed.

It is important to note the NRC's applicable rules of procedure which govern Petitions filed during licensing procedures. The NRC has set high standards requiring a Petitioner to articulate clear facts and provide legitimate, well-founded, specific cause-and-effect evidence. The NRC has done this through its regulations (10 C.F.R. Part 2), and also through its case law.

A. The NRC's Regulations Govern Whether Or Not A Petitioner's Contentions Are Admissible, Or Should Be Dismissed.

The NRC has established rules of practice which specify the requirements that must be met if a contention is to be deemed "admissible." 10 C.F.R. Sec. 2.309(f)(1)(i), (ii), (v), and (vi). The Petitioner must do all of the following:

(1) provide a specific statement of the legal or factual issue to be raised;
(2) briefly explain the basis of its issue;
(3) provide a concise statement of the alleged facts or expert opinions, including references to specific sources and documents, that support the Petitioner's position and upon which the Petitioner intends to rely at the hearing; and
(4) sufficient information demonstrating that a genuine dispute exists in regard to a material issue of fact or law, including references to specific portions of the Application that the Petitioner disputes, or in the case

when the Application is alleged to be deficient, the identification of such deficiencies and supporting reasons for this belief.

Furthermore, the Petitioner must show that:

(5) the issue(s) raised by them is (are) within the scope of the proceedings, and
(6) material to the findings the NRC must make to support the action involved in the proceeding. 10 C.F.R. Sec. 2.309(f)(1)(iii)-(iv).

If a Petitioner's contention fails to comply with any of the above six requirements, the contention is inadmissible and will be dismissed. See Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999).

B. Many Years Of NRC Adjudication And Case Law Has Supplemented The Regulations By Reinforcing The High Standards For Admissibility, And If The Petitioner Cannot Satisfy Applicable Case Law, Its Contentions Will Be Dismissed.

Through the years, NRC adjudications and resulting case law have established several additional legal standards which must be met by a Petitioner:

1. An adjudication is not the proper forum for challenging applicable statutory requirements or the basic structure of the agency's regulatory process. Philadelphia Electric Co. (Peach Bottom Atomic Power Station, Units 2 And 3), ALAB-216, 8 AEC 13, 20, aff'd in part on other grounds, CLI-74-32, 8 AEC 217 (1974).

2. As will be noted below, a contention that attacks a Commission rule, or which seeks to litigate a matter that is, or clearly is about to become, the subject of rulemaking, is inadmissible. 10 C.F.R. Sec. 2.335; Dominion Nuclear Connecticut, Inc. (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 218 (2003) This includes contentions that advocate stricter requirements than agency rules impose or that seek to litigate a generic determination established by Commission rulemaking. Florida Power & Light Company (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 159 (2001)

3. In the same vein, a contention that simply states the Petitioner's views about what regulatory policy should be, does not present a litigable issue. See Peach Bottom, ALAB-216, 8 AEC at 20-21 & Note 33.

4. All contentions must be within the scope of the proceeding as defined by the Commission in its initial hearing notice and order referring the proceeding to the Licensing Board. See Florida Power and Light Company (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-00-23, 52 NRC 327, 329 (2000) Any contention outside the specified scope of the proceeding must be dismissed. Portland General Electric Company

(Trojan Nuclear Plant), ALAB-534, 9 NRC 287, 289-90, note 6 (1979).

5. The Petitioner must present factual information and expert opinions necessary to support its contention. Georgia Institute of Technology (Georgia Tech Research Reactor, Atlanta, Georgia), LPB-95-6, 41 NRC 281, 305, vacated in part and remanded on other grounds and aff'd in part, CLI-95-10, 42 N.R.C. 1, and CLI-95-12, 42 NRC 111 (1995). Neither speculation, nor bare conclusory assertions (whether lay or expert assertions), will support a Petitioner's contention. Fansteel, Inc. (Muskogee, Oklahoma Site), CLI-03-13, 58 NRC 195, 203 (2003). The Board will not make inferences or assumptions of fact in favor of a Petitioner.

6. Documents which are submitted by a Petitioner, without a statement as to its significance, is inadequate to support a contention. Fansteel, CLI-03-13, 58 NRC at 205. All documents which are submitted will be subjected to close Board scrutiny, in order to determine if it actually and factually supports a contention. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 48 (1989), vacated in part on other grounds and remanded, CLI-90-4, 31 NRC 333 (1990)

7. All contentions must allege an issue or fact that is material to the grant or denial of a license application. This means that there must be a link between the alleged deficiency and either the health and safety of the public, or the environment. Pacific Gas & Electric Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LPB-02-23, 56 NRC 413, 439-41 (2002) For example, a contention challenging whether an emergency response plan provides the requisite reasonable assurance based on the adequacy of implementing procedures for those provisions, fails to present a material issue. Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1107 (1983) Thus, any contention that fails directly to controvert an Application does not address a relevant issue and can be dismissed. Sacramento Municipal Utility District (Rancho Seco Nuclear Generating Station), LBP-93-23, 38 NRC 200, 247-48 (1993), review declined, CLI-94-2, 39 NRC 91 (1994).

8. Licensing boards are to litigate contentions, rather than bases. Duke Energy Corp. (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373 379 (2002). The Board can further define and/or consolidate a Petitioner's contentions. 10 C.F.R. Secs. 2.316, 2.319, 2.329.

C. Application Of The Above NRC Procedural Rules To The Honolulu "Context" Within Which Pa'ina Has Sought Its Materials License Requires That The Petitioner Clearly Support Its Contentions.

From Pa'ina's point of view, the "context" of its Application is important. Petitioner's challenge to Pa'ina's Application for a "run of the mill" irradiator should be viewed in the context of Honolulu in the 21st Century:

Honolulu is certainly no "virgin" territory for nuclear activity. In 1945, all of the components for the first nuclear bombs which were dropped on Hiroshima and Nagasaki passed through Honolulu in transit to the Island of Tinian.

As highlighted by Petitioner,[2] for 40 years a Co-60 irradiator functioned at the University of Hawaii, in densely-populated Manoa Valley within a university setting attended by upwards of 20,000 students and faculty each day.[3] Yet, there were no radiation leaks for the 40 years, and there was very little spoken or written consternation about the University's operating irradiator.

Moreover, it is common knowledge today that Pearl Harbor Naval Base is homeport to, and performs dry-dock overhauls for,

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[2] See Exhibit L attached to the Declaration of David L. Henkin, which in turn was attached to Petitioner's October 3, 2005 Request for Hearing.

[3] In contrast to the University's irradiator being located in a densely populated university setting, Pa'ina's irradiator is proposed for sparsely-occupied, light-industrial zoned property located almost as far from residential land as could be located in Honolulu and perhaps, Oahu.

up to 12 of the U.S. Navy's fast-attack nuclear-powered submarines. "As the crow flies," Pearl Harbor is less than 5 miles from the site of Pa'ina's proposed irradiator. Thus, very close proximity to active nuclear reactors is a constant, ongoing fact of life in Honolulu.

There is even more. On the opposite side of Honolulu International Airport from Pa'ina's site, indeed, in "proximity to three nearby air facilities,"[4] the U.S. Navy has constructed 48 earth-covered storage magazines for nuclear bombs. This major undertaking, with nuclear risks obviously much greater than that of Pa'ina's irradiator, was challenged in federal court as not complying with NEPA. However, the undertaking was held not to be subject to a NEPA EIS (or even a generic EIS) by a unanimous U.S Supreme Court. See Weinberger v. Catholic Action Of Hawaii/Peace Education Project, 454 U.S. 139, 102 S. Ct. 197 (1981)

In light of the above, it would seem that Pa'ina's irradiator is a very small part of the nuclear universe which characterizes present-day Honolulu.

[4] The U.S. Supreme Court expressly noted that the principal complaint about the location of the storage magazines for nuclear weapons in "proximity to three nearby air facilities" was the "enhanced risk of a nuclear accident" from planes falling or flying into the magazines. 454 U.S. at 142.

As set forth below, there are a variety of compelling reasons why the Petition ought to be deemed inadmissible or dismissed.

## II. PETITIONER'S CONTENTION THAT THE NRC DOES NOT COMPLY WITH NEPA SHOULD BE DEEMED INADMISSABLE OR DISMISSED BECAUSE PETITIONER CANNOT CHALLENGE THE NRC'S RULES DURING THIS LICENSING PROCEDURE, AND THERE ARE NO FACTS SUPPORTING PETITIONER'S ARGUMENT THAT PA'INA FAILS TO QUALIFY FOR "CATEGORICAL EXCLUSIONS."

Petitioner (at Pages 19-25 of its Request) devotes almost 25% of its Request to its argument that the NRC must comply with NEPA in regards to Pa'ina's Application, despite the NRC's explicit announcement that "an environmental notice for this licensing action is not required, since this action is categorically excluded under the provisions of 10 C.F.R. 51.22(c)(14)(vii)." Petitioner nevertheless argues at length that the NRC cannot apply a "categorical exclusion" to Pa'ina's Application.

However, for several reasons, Petitioner cannot prevail on its challenge to the NRC's "categorical exclusion" determination.

### A. Petitioner's Argument That The NRC Wrongly Granted A "Categorical Exclusion" To Pa'ina Is Actually A Challenge To The Applicable Rules Of The NRC; It Is Outside The Scope Of The Licensing Proceedings; And, Furthermore, Petitioner's Argument Has No Basis In Fact.

It should be remembered that the NRC developed and defined the term "categorical exclusions" during lengthy and detailed rule-making procedures pursuant to 10 C.F.R. 51.

Thus, Petitioner's challenge to the NRC notice is actually a challenge to the NRC's "categorical exclusions" rule. As noted in Part I(B)(1) above, challenges to the NRC's rules are prohibited during licensing procedures such as the instant case. See 10 C.F.R. 2.335(a).

To briefly summarize: Petitioner should have challenged the NRC's rule-making which was accomplished years ago pursuant to 10 C.F.R. 51; in the context of this materials licensing procedure, Petitioner cannot challenge the NRC's definition of "categorical exclusions."

Second, because the NRC published its explicit notice that "categorical exclusion" had been afforded to Pa'ina (which meant Pa'ina's Application had satisfied all applicable environmental considerations), Petitioner's challenge is outside the scope of the licensing proceedings.

Third, and in any event, there are simply no facts which would support the Petitioner's challenge to "categorical exclusion" of Pa'ina under NEPA. The NRC has fully and comprehensively considered all of the alleged potential health, safety and environmental risks (mechanical problems, power

outages, airplane crashes, hurricanes, tsunamis, etc.) during its rule-making procedures, and the NRC has strictly applied those rules to Pa'ina. Neither the design nor the location of Pa'ina's operation is unique. Pa'ina's Category III irradiator is more or less a "run of the mill" irradiator. Category III underwater irradiators have existed since the 1940's. There are simply no "special circumstances" surrounding Pa'ina's irradiator.

Therefore, Petitioner's challenge is beyond the scope of these licensing proceedings, it impermissibly challenges NRC regulations ("categorical exclusions") during these Subpart L hearing procedures, and there are simply no facts shown that Pa'ina's Application or irradiator are unusual or uniquely sited. Petitioner's argument ought to be deemed inadmissible or dismissed.

B. Petitioner's Challenge To Pa'ina's Application Based Upon The Alleged Damage Caused To, Or By, Irradiated Foods Is Misdirected At The NRC And Pa'ina; Instead, The Challenge Ought To Be Addressed To The Federal Food And Drug Administration Or The United States Department Of Agriculture.

Another major portion of Petitioner's October 3rd Request, regarding the safety of irradiated food, is addressed to the

wrong federal agency,[5] and is clearly beyond the scope of these licensing proceedings.

On many occasions, the U.S. Supreme Court has found it necessary to rule that a federal agency does not have jurisdiction to hear or decide matters outside of its Congressionally-authorized field. See, e.g., FDA v. Brown, Williamson Tobacco Corp., 529 U.S. 120 (2000)(federal Food and Drug Administration held not to have jurisdiction over tobacco products)

In a similar vein, the Nuclear Regulatory Commission ("NRC") does not have jurisdiction over the food products which have been irradiated. Indeed, the August 2, 2005 hearing notice cited by Petitioner in its October 3rd Request (at Page 1) specifically directed that parties interested in (or opposed to) irradiated foods should contact the FDA or USDA.

(Petitioner seems to be "forum-shopping." The fact that Petitioner seeks to create "special circumstances" based upon irradiated foods within this NRC licensing proceeding suggests and implies that it (Petitioner) has not been able to make such an argument, successfully, before the FDA or the USDA.)

[5] Dr. William W. Au's Declaration, along with the three exhibits attached thereto, constitute nearly one-third by volume of the entire October 3, 2005 Request filed by Petitioner.

The NRC does not have jurisdiction to hear complaints about irradiated foods. The argument is beyond the scope of these proceedings. The challenge ought to be dismissed.

To summarize this Part II: Petitioner's challenge to the NRC's determination that Pa'ina's Application is "categorically excluded" from NEPA is actually a challenge to the NRC's rules, and should be deemed inadmissable. Petitioner's challenge to the safety of irradiated foods is outside of the jurisdiction of the NRC, and far beyond the scope of these proceedings. This challenge should be dismissed.

## III. PETITIONER'S CHALLENGES TO PA'INA'S LICENSE APPLICATION CONFLICT WITH THE NRC'S RULES, ARE OUTSIDE THE SCOPE OF THESE PROCEEDINGS, ARE CONCLUSORY RATHER THAN FACTUAL, FAIL TO SHOW LOGICAL LINKAGE, AND ARE OTHERWISE WHOLLY INSUFFICIENT, AND ALL OF THE CHALLENGES SHOULD BE DEEMED INADMISSABLE OR DISMISSED.

There are numerous reasons why Petitioner's October 3rd Request for Hearing ought to be deemed inadmissible, or be dismissed. These reasons are based upon the NRC's rules and case law. (See Parts I(A) and I(B) above)

Probably the major reason for a ruling of inadmissibility, of Petitioner's claims is the fact that Petitioner challenges

the NRC's rules themselves, and actually argues for rule-change. This is impermissible.

It is well settled that a party (such as Petitioner herein) cannot challenge a Commission regulation in a hearing proceeding. See, e.g., 10 C.F.R. 2.335(a). That provision provides that:

> "Except as provided in paragraphs (b), (c), and (d) of this section, no rule or regulation of the Commission, or any provision thereof, concerning the licensing of production and utilization facilities, source material, special nuclear material, or byproduct material, is subject to attack by way of discovery, proof, argument or other means in any adjudicatory proceeding subject to this part."

Thus, any challenge to the granting of a Materials License cannot constitute, sub silentio, a challenge to the Commission rules and regulations which govern the granting of a Materials License. In this particular case, Petitioner's challenges to the granting of the Materials License to Pa'ina are, in actuality, challenges to the Commissions regulations themselves.

The only means by which to avoid the impact of 10 C.F.R. 2.335(a) is set forth in 10 C.F.R. 2.335(b), which establishes the exception for "special circumstances." In a "special circumstance" situation, there is something so unusual, or so unexpected, that the Commission's regulations would not be adequate to govern the unusual situation. That section provides as follows:

"A party to an adjudicatory proceeding subject to this part may petition that the application of a specified Commission rule or (a) of this section, be waived or an exception made for the particular special circumstances with respect to the subject matter of the regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted. The petition must be accompanied by an affidavit that identifies the specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted. The affidavit must state with particularity the special circumstances alleged to justify the waiver or exception requested. Any other party may file a response by counter affidavit or otherwise." (Emphasis added)

In light of the above provisions, many of Petitioner's challenges herein should be deemed inadmissible, because there are no "special circumstances" in Pa'ina's Application, and all of Pa'ina's submittals are in conformance with the Commission's regulations.

Furthermore, and significantly, Pa'ina has sought no waivers or exceptions to any of the rules. Thus, no "special circumstances" have been created by Pa'ina's Application. The Genesis II is a Category III underwater irradiator, which is clearly the subject matter for which 10 C.F.R. 36 was adopted.

With the NRC's regulations and case law as background, each of Petitioner's "Areas of Concern" ought to be deemed inadmissible, or dismissed. Taking Petitioner's Areas of Concern in seriatim:

A. Petitioner's Area Of Concern No. 1, Alleging Unsafe Loading And Unloading Of Co-60 Pencils, And Claiming That No Assessments Have Been Done, Actually Seeks Rule Changes; Is Mis-Directed Against Pa'ina Because Petitioner's Concern Is Predicated Upon Nuclear Reactors; The Concern Has Been Fully Assessed; And There Are No "Special Circumstances" Warranting An EIS, EA Or Hearing.

Although Petitioner expends a large portion of its Petition with its allegations in Area of Concern No. 1 (unsafe loading and unloading of Co-60 pencils), its allegations are not germane and are unavailing.

First, most of Petitioner's allegations challenge the NRC's rules for irradiators, or seek a change in those rules. This is impermissible, and the Contention ought to be deemed inadmissible.

Many of Petitioner's comparisons or arguments are based upon comparisons with regulations for nuclear reactors. Thus, for example, Petitioner (through Dr. Resnikoff) contends that "The irradiator must have a single failure proof crane." This rule may be applicable to nuclear reactors, but there is no such rule regarding irradiators. Indeed, most irradiators are loaded with a rented single crane. Furthermore, and in any event, the Genesis II irradiator has a built-in cask lifting ability which utilizes two, not just one, lifting systems.

Petitioner would have this Board ignore the significant differences between a nuclear reactor and an irradiator, or

between regulations governing nuclear reactors and regulations governing irradiators, and the added safety provided by Pa'ina's two lifting systems. The Contention ought to be deemed inadmissible.

Second, Pa'ina's irradiator and its type has, in fact, been fully analyzed and critiqued by the NRC. In a prior case, In the Matter of CFC Logistics, Inc., Docket No. 30-36239-ML, ASLBP No. 03-814-01-ML, the NRC, Region I, fully reviewed and evaluated (during an irradiator application process) the risk of dropping shipping casks, and the staff concluded:

"The risk of dropping a shipping cask is minimized by using hoists and other equipment which are qualified for the load and by administrative controls which prevent movement of a cask directly over the source when they are in the pool. . . . The sources used in this facility are registered pursuant to 10 C.F.R. 32.231 and must meet the performance criteria in 10 C.F.R. 36.21 which include impact, puncture and bending tests. Based on the fact that the sources must meet those criteria, it is not certain that the dropping of a cask on sources stored in the pool would result in the immediate release of radioactive material to the water. Further, the staff does not have information which indicates that a cask has been dropped at an irradiator facility." (Affidavit of John D. Kinneman, attached hereto as Exhibit A)

Petitioner's Area of Concern No. 1, alleging in conclusory terms that the Genesis II system was not properly or fully assessed, is further contradicted by an NRC staff inspection on an identical hoist system which found:

"The inspectors evaluated the design, engineering practices, and material used in the fabrication of various components, and integrity and capacity of the assembled

components to perform their respective tasks. This included a review of adequacy of the pool integrity, overhead crane-hoisting supporting track and the hoist as-designed and as-built capability to handle working loads, plans for in-service maintenance and testing, and an evaluation of the response of the facility to load drops either from equipment failure or a seismic event although the probability and the expected magnitude of a seismic event are low.

The inspectors discussed and reviewed: the design load limit for various components including the attachment lifting lugs; the cable and cable connector strength and test results; cable strength specification versus the load requirements, the hoist motor horsepower versus the load limitation for motor stalling before exceeding the load limit, safety considerations and control system response in case of a power failure during load lifting/moving sequence; and hoist and supporting structure susceptibility to a credible seismic event (earthquake). The inspectors discussed with CHL engineers the design of the overhead crane-hoisting supporting track and the hoist as-designed and as-built capability to handle the working loads of placing loaded containers into and out of the pool. The inspectors also reviewed calculations related to the strength of various components of the system and their ability to withstand static and dynamic stresses during normal operations and those caused by failure of the support cables." (See August 27, 2003 letter from John D. Kinneman to CFC Logistics, a true and correct copy of which is attached hereto as Exhibit B)

It is clear that Petitioner's Area of Concern No. 1 (that Pa'ina's intended equipment has not been properly assessed) is factually wrong, and Area of Concern No. 1 ought to be dismissed.

Third, Petitioner's Area of Concern No. 1 ought to be dismissed because there is no showing by Petitioner as to "how" radioactive material will be spread if caused by a dropped cask, i.e., there is no linkage established between a drop and the alleged spread of radiation. Petitioner fails to set forth

sufficient facts detailing its allegation. Petitioner's argument is based upon bare conclusions, not logical, sequenced or detailed evidence.

Furthermore, even if a cask were to be dropped on the source, there is no evidence that any radioactive material would be released into the air. (See Affidavit of John D. Kinneman, Para. 4, attached hereto as Exhibit A) There are automatic shutdowns built into Pa'ina's system, and Petitioner has failed to show that there would be any serious contamination of the water should a cask be dropped. Following its exhaustive evaluation of the system, the NRC staff was caused to conclude that: "A dropped cask will not cause a release of radioactive material into the air." (See Affidavit of John Kinneman, attached hereto as Exhibit A)

Fourth, there is no "sanitary sewer" connected to the irradiator as stated in the License Application. Therefore, there is no possibility of release of contamination to the "sanitary sewers."

Fifth, even though the evidence shows that no casks have ever been dropped at an irradiator facility, Petitioner nevertheless speculates whether any appropriate emergency plan has been adopted. Based on case law, this allegation ought to be deemed inadmissible because it is not unique from other

irradiators or dismissed because it is not supported by fact. Any contention challenging whether an emergency response plan provides the requisite reasonable assurance based on the adequacy of implementing procedures for those provisions, fails to present a material issue. Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1107 (1983) Thus, Petitioner's challenge based upon a speculative question as to an emergency response plan should be deemed inadmissible because it is not material to these proceedings. (Indeed, a remediation plan would in fact be developed, typically after a source is damaged, subject to NRC's approval at that future time. Only after such an incident occurred would the specifics be known, such that the NRC could properly and fully approve a remediation plan.)

Sixth, and finally, Petitioner (through Dr. Resnikoff) makes general speculative allegations that challenge the training of Pa'ina's personnel to handle emergencies. Insofar as Petitioner challenges the NRC's applicable regulations governing training, personnel and emergency response, the Petition ought to be deemed inadmissible.[6]

In light of the above, Petitioner is unable to create any factual "special circumstance" warranting a hearing or an EIS.

[6] As set forth in the attached Affidavit of Russell Stein, training for emergencies is a major portion of the irradiator's operation pursuant to NRC regulations.

Consequently, Area of Concern No. 1 in its Petition ought to be deemed inadmissible.

B. Petitioner's Area Of Concern No. 2, Alleging That The Petition Fails To Address Risks Of Overheating, Fails To Create A "Special Circumstance" And Ought To Be Dismissed.

Although Petitioner in its Area of Concern No. 2 alleges that Pa'ina's application does not show that the system will not overheat, in fact that application does prove that no overheating will occur. Consequently, Petitioner's Area of Concern No. 2 ought to be dismissed.

First, it should be noted that Petitioner complains about redactions of thermal projections contained in the Application. The NRC staff inserted the redactions acting within its discretion, and because those redactions are consistent with NRC's regulations, Petitioner's complaint ought to be dismissed. See Private Fuel Storage L.L.C., CLI 05-08 (3/16/05).

Second, the energy emitted from the sources is constant (except for slow decay) and the conditions effecting heat transfer are effectively constant. There is no scenario based upon physics that the temperature can significantly increase or decrease.

Third, Petitioner fails to show "linkage." The fact that the temperature can neither increase nor decrease significantly is further borne out by the fact that Petitioner fails to explain how the "plenum" can overheat. Petitioner (through Dr. Resnikoff) has provided no meaningful calculations demonstrating any potential for overheating. Furthermore, Petitioner (through Dr. Resnikoff) wholly fails to explain how the Co-60 would be released to the air. Petitioner (through Dr. Resnikoff) has failed to explain how the ion exchange resins would become highly radioactive. No evaporation occurs on the Co-60. There is no evaporation process to allow radioactive material into the helium environment or the pool water. Petitioner's speculative and bare conclusion about potential damage to the Co-60 pencils in a supposed evaporation process is insufficient to support its challenge. Russell Stein of GRAY*STAR, Inc. and his engineers correctly performed the thermal calculations for the Genesis II.

In sum: Its Contention is based upon speculative, conclusory opinions lacking factual basis or linkage. Petitioner has failed to show any "special circumstances" warranting a hearing, EIS or EA.

C. Petitioner's Area Of Concern No. 3, Inadequate Provision For Quality Assurance, Is A Direct Challenge To The NRC's Regulations, Not Relevant To A Materials License Proceeding, And Is Based Upon

Sheer Speculation; Consequently, It Should Be Deemed Inadmissible or Dismissed.

Petitioner's allegations contained in its Area of Concern No. 3, that Pa'ina makes inadequate provision for quality assurance, is basically a challenge to the NRC's regulations, is largely mis-directed at Pa'ina, and is based upon insufficient, speculative and/or incorrect assertions.

First, under its regulations, the NRC handles the quality assurance of materials sources outside of, and independent from, a license application such as this. The NRC has strict regulations which govern the certification of sealed sources to be used by Pa'ina. See 10 C.F.R. 32.210. Those NRC regulations govern the source suppliers, not Pa'ina, and therefore Petitioner's attack is outside the scope of this proceeding and a direct challenge to 10 C.F.R. 32.210.

Pa'ina is bound by the NRC's regulations to carry out leak testing under 10 C.F.R. 36.59(b). This has been set forth in the Application and is reviewed by the NRC pursuant to 10 C.F.R. 36. Thus, in this proceeding, Petitioner cannot speculatively challenge Pa'ina's future performance in a function closely governed by the NRC's regulations.

Petitioner has not adequately alleged or shown that there are any "special circumstances" involving Pa'ina's use of "Registered Sealed Sources". In fact, Petitioner has challenged

matters which are far beyond the scope of these proceedings, and/or matter which are governed by the NRC in other, separate proceedings. Petitioner's Area of Concern No. 3 ought to be deemed inadmissible or dismissed.

D. Petitioner's Area Of Concern No. 4, Alleging Prolonged Loss Of Electricity, Fails To Create Any "Special Circumstances" And Should Be Dismissed.

Petitioner speculates as to problems which could hypothetically occur should electricity be unavailable to Pa'ina's irradiator for extended periods of time.

The NRC has already conducted exhaustive studies and determined that underwater irradiators do not threaten safety even if there are prolonged electricity outages. Thus, the NRC has determined: "For underwater irradiators, no response is required from the applicant in a license application. See NUREG 1556, Vol. 6, "Consolidated Guidance About Material Licenses," January 1999.

In point of fact, the Genesis II has two systems to monitor safety, both of which are powered by their own batteries. The NRC has already determined that the safety of Genesis is "passive," meaning the Co-60 will remain underwater, and is therefore always in a "fully shielded" position. Pa'ina's

Genesis II can be safely maintained indefinitely without utility power.

Contrary to Petitioner's allegations, there is no electrical cooling system, and therefore there is no required power. Thus, Petitioner's incorrect allegation cannot create any "special circumstance."

There is no helium connected to any of the bells.

If electricity were to be unavailable for a period of time, all motion would cease. The system is "passive."

There are no plugs, drains or drainage connections on the irradiator.

Again, Pa'ina's irradiator is typical, and its safety is required and governed by applicable NRC regulations. Petitioner has set forth no "special circumstances" which warrant an EIS, EA or hearing. Concern No. 4 ought to be dismissed.

E. Petitioner's Area Of Concern No. 5, A Possible Break In Helium Line, Fails To Create Any "Special Circumstances" And Ought To Be Dismissed.

Pa'ina's simple response to Area of Concern No. 5 is: there are no helium lines connected to any of the bells. Consequently, Petitioner's Area Of Concern No. 5 ought to be

dismissed since there is no factual basis for it, and it is therefore a groundless hypothetical discussion.

F. "Natural Phenomena" Are Fully Encompassed By The NRC'S Regulations, And In Any Event, Pa'ina's Site Is Well-Protected By Oahu's Land Formations And It Is Not Located In A Tsunami Evacuation Zone.

Major Area of Concern No. 6 raised by Petitioner is that the Application does not discuss "emergency events" caused by natural phenomena such as tsunamis (tidal waves), earthquakes and flooding. (Page 15 of Petitioner's Request) Petitioner seeks to create a "special circumstance" by means of its allegation that the NRC's regulations did not contemplate Pa'ina's Application.

First, Petitioner has failed to present a material issue. A contention challenging whether an emergency response plan provides the requisite reasonable assurance based on the adequacy of implementing procedures for those provisions, fails to present a material issue. Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1107 (1983)

Second, the NRC closely scrutinized and evaluated precisely these risks of natural phenomena such as flooding and tidal waves (called "tsunamis"). As far back as 1993, during the

review process for 10 C.F.R. 36, the NRC reported at Federal Register Vol. 58, No. 25:

> "The NRC considered whether there should be siting requirements dealing with possible flooding of the irradiator or tidal waves. The NRC decided that no siting requirements with respect to possible flooding or tidal waves could be justified on health and safety basis because flooding of the facility would not destroy the integrity of the shielding walls."

The Genesis II irradiator does not use "shielding walls" as stated by the NRC, but it <u>does</u> use water shielding which would not be compromised by flooding or a tsunami.

Furthermore, although Petitioner by innuendo attempts to suggest that Pa'ina's site is prone or open to tsunamis or flooding (citing Oahu's North Shore), there is actually no factual basis supporting its bare conclusory assertions. Thus, the proposed site of the Genesis II faces in a southerly direction, towards benign Tahiti. It is shielded by Oahu's natural land formations on the southwest side from Japan and Indonesia, and it is shielded by natural land formations on Oahu's eastern and northern sides from Alaska, California and South America.

Pa'ina's relatively-protected positioning is reinforced by the statement from the Hawaii State Department of Transportation's letter to Michael Kohn of Pa'ina, which noted that Pa'ina's site is <u>not</u> in a tsunami flood evacuation zone, and the fact that the south shore of Oahu has never sustained a

wave higher than 3 feet from any tsunami since 1837. (See Exhibit C attached hereto)

Finally, Petitioner cannot establish any "linkage" between the irradiator and flooding or tsunamis. Even if there were flooding or a tsunami, there would be no release of radioactive material or radiation from the irradiator because of its deliberately passive engineering, i.e., the source is already well under water. Notably, Petitioner (through Dr. Resnikoff's Declaration) does not explain just how tsunamis or hurricanes would have a radiation safety effect on the irradiator.

Based upon the above, Petitioner's Area of Concern No. 6 ought to be deemed inadmissible or dismissed for several reasons. It is actually a direct challenge to NRC regulations. Petitioner cannot create a "special circumstance" based upon Pa'ina's situs, since the site is relatively well-protected, it is <u>not</u> in a tsunami evacuation zone, and there are other occupied buildings nearby.

G. The Possibility of Aviation Accidents Is Fully Covered By NRC Regulations, And In Any Event Does Not Create "Special Circumstances" Warranting A Hearing Or Further Environmental Documentation.

Area of Concern No. 7 raised by Petitioner is its claim that the possibility of aviation accidents was not properly analyzed under the NRC's regulations, and therefore a "special

circumstance" exists which warrants a hearing and/or further environmental document.

Petitioner's Area of Concern No. 7 is actually a challenge to the applicable regulations governing irradiator licensing, and should therefore be deemed inadmissible. During its lengthy 10 C.F.R. 36 rule-making procedures, the NRC specifically and exhaustively analyzed the possibility of air crashes near airports in proximity to irradiators. Thus, Federal Register Vol. 58, No. 25 reports in pertinent part:

"The NRC considered whether there should be a prohibition against locating irradiators near airports because of risk of radiation overexposures caused by an airplane crash. The NRC has concluded that a prohibition against placing an irradiator where other types of occupied buildings could be placed is not justified on safety grounds. The radioactive sources in an irradiator would be relatively protected by damage because they are generally contained within 6-foot thick reinforced-concrete walls and are encapsulated in steel. Even if a source were damaged as a result of an airplane crash, large quantities of radioactivity are unlikely to be spread from the immediate vicinity of the source rack because the sources are not volatile. With this protection, the radiological consequences of an airplane crash at an irradiator would not substantially increase the seriousness of the accident. Therefore, NRC will allow construction of an irradiator at any location at which local authorities would allow other occupied buildings to be built."

Because Pa'ina's Genesis II irradiator is passive, below ground and contained in a deep well of water, it is better protected than if surrounded, above-ground, by a reinforced wall. Being underground, it is not in the direct path of a hypothetical airplane incident.

Therefore, Petitioner's Area of Concern No. 7 is actually a challenge to the NRC's thought out, well-developed rules governing siting of irradiators near airports. Petitioner cannot create a "special circumstance" out of Pa'ina's passive, below-ground irradiator, which is being constructed where other occupied buildings exist. Therefore, this challenge should be deemed inadmissible.

H. Petitioner's Area Of Concern No. 8, Which Challenges The Transportation Of Cobalt-60 To The Pa'ina Facility, Is Beyond The Scope Of The Instant Materials License And Is Therefore Irrelevant; Consequently, It Fails To Create Any "Special Circumstances."

Transportation of sources to and from Pa'ina's facility is the responsibility of the source suppliers, not of Pa'ina. Generally speaking, all NRC regulations governing the transport of isotopes are found in 10 C.F.R. 71. Allegations about transportation of radioactive material are beyond the scope of this materials licensing proceeding.

(Petitioner could or should have raised the issue during rulemaking for 10 C.F.R. 71.)

Clearly, the Petitioner in Area of Concern No. 8 states and shows no facts which create a "special circumstances" within Pa'ina's Application. Therefore, this challenge should be deemed inadmissible or dismissed.

I. Petitioner's Area Of Concern No. 9, Regarding Facility Security, Is Inapplicable To Pa'ina's Materials License Application Because The NRC Dictates Facility Security Outside The License Application Procedure; Furthermore, And In Any Event, Petitioner Does Not Create Any "Special Circumstances" Warranting A Hearing Or Further Environmental Documentation.

In point of fact, site-specific security ("Safeguards") requirements are dictated directly by the NRC to the Applicant, in this case, Pa'ina. These requirements are within the sole authority and discretion of the NRC, for obvious security reasons. These security issues are tied directly to "Safeguards Information." Consequently, Area of Concern No. 9 ought to be deemed inadmissible or dismissed.

Petitioner's Request alleges in general terms (through a Dr. Gordon R. Thompson) that potential acts of malice or insanity create "special circumstances" warranting a hearing and/or an EIS. However, this same type of argument as to "acts of malice or insanity" has been made in a number of prior Commission matters involving a variety of nuclear facilities, and the argument has been consistently rejected as not being within the scope of NEPA. See Pacific Gas & Electric Co., CLI 03-01 (1/23/03) (and citations therein)

In the Pacific Gas & Electric decision, the Commission specifically held that NEPA "does not require a terrorism

review, and . . . an environmental impact statement is not the appropriate format in which to address the challenges of terrorism." The Commission ended its Opinion by emphasizing that it is working positively to eliminate or reduce the impacts of terrorism: "Although we decline to consider terrorism in the context of NEPA, the Commission is devoting substantial time and resources to combating the potential for terrorism involving nuclear facilities and materials."

Finally, it is notable that the factual bases upon which Petitioner seeks to create "special circumstances" re facility security are incorrect or grossly inaccurate. Petitioner's claim that a person standing one meter from an unshielded, one curie source of Co-60 would receive a dose of 1.37 mrem/hr is off by a factor of 1000. Additionally, Pa'ina is asking for a license maximum of 1 million curies, not the "4.35 million curies" as speculated by Petitioner. The typical number of curies from a brand new source is about 10,000 curies per source, with a constantly-shrinking strength over time.

Only the NRC has authority to issue security requirements, and security mandates have not yet been established for Pa'ina. NEPA is not a proper vehicle for addressing terrorism. Finally, Petitioner's grossly inaccurate figures do not create "special

circumstances" necessitating any further environmental documentation or hearing.

Consequently, Petitioner's Area of Concern No. 9 ought to be deemed inadmissible or dismissed.

J. Petitioner's Area Of Concern No. 10, Alleging Inadequate Protection Of Co-60 In Transit, Is Beyond The Scope Of Pa'ina's Application; In Any Event, Petitioner Has Failed To Allege Facts Which Create Any "Special Circumstances."

As noted above, the security of the source materials during transit to Hawaii is beyond the scope of this Application, since Pa'ina is not the transporting entity. Petitioner's challenge is therefore mis-directed at Pa'ina and outside the scope of this proceding.

It logically follows that since Pa'ina is not the transporter of the source materials, Petitioner has not alleged and cannot allege any facts against Pa'ina's Application which create "special circumstances."

Petitioner has failed to allege or show any legitimate "special circumstances" against Pa'ina's Application arising out of the transport of source materials. Petitioner's Area of Concern No. 10 ought to be deemed inadmissible or dismissed.

K. Petitioner's Area Of Concern No. 11, Inadequate Liability Insurance, Is A Direct Challenge To The

Governing Regulations And Therefore Ought To Be Deemed inadmissible or Dismissed.

Petitioner alleges that the $113,000 Pa'ina has "offered" in financial assurance for decommissioning is inadequate.

Petitioner's challenge to the $113,000 financial assurance posted by Pa'ina is actually a challenge to the NRC's regulations, particularly 10 C.F.R. Sec. 30.35(d). That section mandates the amounts of financial assurance appropriate for this type of irradiator. Pa'ina has complied with that regulation.

Thus, Petitioner's Area of Concern No. 11 ought to be deemed inadmissible because it is actually a direct challenge to the NRC's regulations, and/or Petitioner actually seeks a rule-change which is impermissible in this licensing proceeding.

L. Petitioner's Area Of Concern No. 12, Improper Redacting Of Pa'ina's Application, Is Mis-directed Because The NRC Staff, Not Pa'ina, Performed The Redactions.

Again, Petitioner has mis-directed an Area of Concern at Pa'ina.

Petitioner alleges in Area of Concern No. 12 that the redactions in Pa'ina's Application were improper, and in effect blocks Petitioner from including detailed "contentions" in support of its Request for Hearing. Thus, Petitioner's

unhappiness with the redactions are actually an impermissible challenge to the NRC's regulations which authorize redactions.[7]

Furthermore, Petitioner's challenge implies that Pa'ina performed the redactions. However, that is not true. It was the NRC, acting within its jurisdiction and discretion, which performed the redactions.[8] Numerous redactions, and even redactions to be made in the future, have been approved by the NRC. See Private Fuel Storage L.L.C., CLI 05-08 (3/16/05)

For these reasons, Petitioner's Area of Concern No. 12 ought to be deemed inadmissible or dismissed.

## IV. CONCLUSION.

For the reasons stated above, Applicant Pa'ina Hawaii LLC respectfully opposes admission of all of the Concerns and arguments put forth by Petitioner. Pa'ina also requests that Petitioner's October 3rd Request for Hearing be denied and this case dismissed.

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[7] There is a certain irony in Petitioner's challenges. On the one hand, Petitioner complains of the risk that terrorists might target irradiation facilities such as Pa'ina's (Concern #9). Yet, on the other hand, Petitioner claims that all of Pa'ina's redactions should be eliminated so that all information can be freely available to the public, including, presumably, curious terrorists (Concern #12). Not only is the irony obvious, but one might safely conclude that Petitioner is actually arguing against itself, effectively canceling out both arguments.

[8] See CLI-05-22, October 19, 2005, "To provide guidance for the future, we remind our licensing boards that section 147 of the Atomic Energy Act gives NRC authority over protecting safeguards information from unauthorized disclosure. The protection of safeguards information, where warranted, is absolute; there is no balancing of the government's duty to protect safeguards information against the public interest in disclosure."

The NRC has already and properly determined that Pa'ina's Application is entitled to a "categorical exclusion" under NEPA. The Petitioner has stated no sound reasons why the determination was in any way incorrect.

Furthermore, the Petitioner's twelve Areas of Concern fail to state or create any "special circumstances" warranting an EA, EIS or hearing.

Pa'ina has requested no special exemptions or waivers for its "run of the mill" irradiator, which means that Pa'ina's Application reflects no "special circumstances."

Pa'ina believes that all of the Petitioner's arguments are not germane to this proceeding. Thus, for example, one-third of the Request for Hearing attacks the irradiation of foods, despite the NRC's published notice which directs that such arguments are to be made to the FDA or USDA. Similarly, fully one-quarter of the Request for Hearing challenges the term "categorical exclusion," a term which is contained in the NRC's regulations; consequently, Petitioner is impermissibly challenging that NRC regulation. Likewise, Petitioner strenuously attacks the Registration of the source materials, as well as the transportation of the source materials, but both matters are far beyond the scope of this proceeding. In the context of this Application for a Materials License,

Petitioner's challenges are frivolous and cannot hope to accomplish anything of relevance or value.

The Commission has not hesitated to use the term "frivolous" where unfounded attacks on the NRC staff are made. See, e.g., Duke Energy Corporation, CLI-03-17 (Dec. 9, 2003)(petitioner's suggestions that the NRC did not give issues a "hard look" bordered on the frivolous). The Petitioner, in respect to Pa'ina, ignores the NRC's published directives, presents unfounded allegations and contentions, makes speculative and conclusory contentions, or makes generalized challenges which are not germane or material to the licensing issue. Pa'ina believes that the October 3rd Petition is "frivolous."

Consequently, Applicant Pa'ina Hawaii LLC requests any and all relief to which it may be entitled.

DATED: Honolulu, Hawaii Oct. 26, 2005.

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Attorney for Applicant
PA'INA HAWAII LLC

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

| | | |
|---|---|---|
| In the Matter of | ) | |
| Pa'ina Hawaii, LLC | ) | Docket No. 30-36974-ML |
| | ) | |
| Materials License Application | ) | ASLBP No. 06-843-01-ML |

**DECLARATION OF RUSSELL N. STEIN IN RESPONSE TO THE DECLARATION OF MARVIN RESNIKOFF OF SEPTEMBER 30, 2005**

Under penalty of perjury, I, Russell N. Stein, hereby declare that:

(1) I am the Vice President and Chief Operating Officer of GRAY*STAR, Inc. ("GRAY*STAR") at 200 Valley Rd., Ste. 103, Mt. Arlington, New Jersey.

(2) I have been in the irradiator industry for over 27 years and am considered a leading irradiator designer. I have specific experience designing several irradiators, two of which have been built. Not only have I designed irradiators, but I have also operated irradiators as an Irradiator Operator, Radiation Safety Officer and Manager. I have never been cited with an item of non-compliance by the NRC.

(3) I am currently a member of the American Nuclear Society, the American Society for Materials, the Radiation Process Simulation and Modeling User Group, and the American Society for Testing and Materials. I have presented many technical papers to various forums on irradiators and irradiator design, including a training session to NRC and Agreement State inspectors from across the country.

(4) I am the chief designer of the Genesis Irradiators(tm) responsible for all design, engineering, manufacturing and operating procedures.

(5) I have reviewed the Declaration of Marvin Resnikoff, Ph.D. in Support of Petitioner's Areas of Concerns. My review of his Declaration follows utilizing his paragraph numbering:

1. I do not accept or deny his statements in paragraph #1.

2. I do not accept or deny his statements in paragraph #2.

3. I confirm his statements in paragraph #3.

4. I do not accept or deny his statements in paragraph #4.

5. I do not accept or deny his statements in paragraph #5.

6. I do not accept or deny his statements in paragraph #6.

7. I do not accept or deny his statements in paragraph #7.

8. I do not accept or deny his statements in paragraph #8.

9. I do not accept or deny his statements in paragraph #9 except that there are items mentioned in Dr. Resnikoff's Declaration that indicate that he either did not read the License Application or did not understand the License Application.

10. Dr. Resnikoff, in paragraph #26, claims that the affected parties are not able fully to evaluate the environmental impacts and determine how their interests may be affected. Therefore, it would be against his best professional judgment that he can make his conclusions in paragraph #10.

In my declarations to follow, I will indicate that Dr. Resnikoff's reasoning is flawed and that his conclusion that the Application should be denied is based on insufficient or inaccurate information and analysis.

I believe that he has misinterpreted the definition of "special circumstances" in 10CFR51.22(b) which reads:

> "Special circumstances include the circumstance where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102(2)(E) of NEPA."

The claims of "special circumstances" as outlined in Dr. Resnikoff's Declaration are not a challenge to "categorical exclusion" but are a challenge to whether or not the NRC can pre-define categorical exclusions. "Special circumstances" may be used to challenge the applicability of the NRC's rules if the Commission agrees through certification that the application of the rule does not serve the purpose for which the rule was adopted. Dr. Resnikoff is therefore challenging the rulemaking of 10CFR51.

I believe that the items in Dr. Resnikoff's Declaration claimed as special circumstance were indeed contemplated when the NRC's rules were adopted. Therefore, the review of the NRC staff of the License Application correctly applies the rules, and this application does serve the purpose for which the rule was adopted. Therefore, I believe that there are no "special circumstances" that would allow for a waiver or exclusion of the Commission's rules.

11. I do not agree or deny that RWMA serves as a technical consultant to the States of Utah and Nevada.

I am not an expert on the handling of irradiated reactor fuel and I contend that Dr. Resnikoff has not illustrated that he is an expert in handling cobalt-60. I will agree that there are some similar aspects. However, there are many aspects that are very different in relation to safety of handling and storage.

12. Dr. Resnikoff has not illustrated that the loading and unloading of cobalt-60 pencils present a significant risk of a cask drop. An assessment was performed on the same loading equipment by the NRC by Region I staff and they concluded that:

> "The risk of dropping a shipping cask is minimized by using hoists and other equipment which are qualified for the load and by administrative controls which prevent movement of a cask directly over the source when they are in the pool." "The sources used in this facility are registered pursuant to 10CFR32.231 and must meet the performance criteria in 10CFR36.21 which include impact, puncture and bending tests. Based on the fact that the sources must meet these criteria, it is not certain that the dropping of a cask on sources stored in the pool would result in the immediate release of radioactive material to the water. Further, the staff does not have information which indicates that a cask has been dropped at an irradiator facility." See Affidavit of John D. Kinneman, In the Matter of CFC Logistics, Inc., Docket No. 30-36239-ML, ASLBP No. 03-814-01-ML, September 9, 2003, a true and correct copy of which Affidavit is attached hereto as Exhibit A.

This Kinneman Affidavit was prepared in response to a previous Affidavit by Dr. Resnikoff and Dr. Resnikoff should be familiar with the Kinneman Affidavit.

I concur with the statement of John Kinneman.

Further, the NRC Staff has concluded the following on an identical hoist system:

"The inspectors evaluated the design, engineering practices, and material used in the fabrication of various components, and integrity and capacity of the assembled components to perform their respective tasks. This included a review of adequacy of the pool integrity, overhead crane-hoist supporting tack and the hoist as-designed and as-built capability to handle working loads, plans for in-service maintenance and testing, and an evaluation of the response of the facility to load drops either from equipment failure or a seismic event although the probability and the expected magnitude of a seismic event are low."

"The inspectors discussed and reviewed: the design load limit for various components including the attachment lifting lugs; the cable and cable connector strength and test results; cable strength specification versus the load requirements, the hoist motor horsepower versus the load limitation for motor stalling before exceeding the load limit, safety considerations and control system response in case of a power failure during load lifting/moving sequence; and hoist and supporting structure susceptibility to a credible seismic event (earthquake). The inspectors discussed with CHL engineers the design of the overhead crane-hoist supporting track and the hoist as-designed and as-built capability to handle the working loads of placing loaded containers into and out of the pool. The inspectors also reviewed calculations related to the strength of various components of the system and their ability to withstand static and dynamic stresses during normal operation and those caused by a failure of the support cables." See Letter from John D. Kinneman to CFC Logistics, Subject: "Inspection 03036239/2003001, CFC LOGISTICS, INC., QUAKERTOWN, PENNSYLVANIA, August 27, 2003, a true and correct copy of which Letter is attached hereto as Exhibit B.

Dr. Resnikoff's statement that assessments must be performed implies that assessments are not performed, which is not the case as illustrated above. These assessments are part of the review process.

Dr. Resnikoff states that "the irradiator must have a system to prevent the cask from passing over the Co-60 pencils". [Underline added for emphasis.] Dr. Resnikoff claims that this is based on similarity to reactors. The word "must" either implies that the regulations should be changed or that he has mistakenly interpreted the rules for irradiators which ARE NOT similar to those of reactors. The assurance that "a cask will not fall on sealed sources" is met by the use of hoists and other qualified equipment and by administrative controls that prevent movement of a cask directly over the sources when they are in the pool. This is reviewed by the NRC staff.

Should for any reason sources be damaged, it is common and appropriate practice to immediately notify the NRC and to develop a remediation plan based on the specifics that can only be determined at the time of the event. This remediation plan would have to be approved by the NRC at that time. To develop a remediation plan prior to an event would allow the Licensee to execute the plan without specific NRC approval and would potentially lead to safety issues if the pre-incident plan did not take into account all of the factors involved in a specific incident.

Unlike a reactor, there is no rule that an "irradiator must have installed a single failure proof crane, so that the crane cannot fail". This is true of all irradiators. It is important to note that most irradiators are loaded with a rented single crane. Both the Genesis I irradiator and the Genesis II irradiator have the cask lifting ability designed specifically for the application built into the system. The system actually utilizes two hoists, both with dual braking systems, each utilizing two cables (four in total). Each cable is capable of supporting the heaviest shipping cask available.

13. Dr. Resnikoff's "walk through" of the loading procedures for the CFC Logistics Genesis I is generally correct and is the same for the Pa'ina Hawaii Genesis II. However, as discussed above, it is very unlikely that a shipping cask would drop onto the sources. Further, he has not illustrated how a shipping cask drop on the source would seriously contaminate the pool water.

If, for any reason, cobalt-60 were to contaminate the ion exchange columns, the water circulation system would be automatically shut down when the radiation level reaches 1 mR per hour. This level is below the radiation limits for an irradiator under 10CFR36 which is 2 mR per hour. This information is available in the License Application.

In the event of a suspected or actual source encapsulation failure, the NRC must be notified, a specific remediation plan must be drafted, approved by the NRC and then executed. If any ion exchange system is used to remove cobalt-60 from the water, and if the contamination level is above the restrictions of 10CFR57(e) then the resin WOULD NOT be released for unrestricted use.

There is no "sanitary sewer" connected to the irradiator as stated in the License Application. Therefore, there is no possibility of release of radioactivity to the sanitary sewers.

John Kinneman (NRC Staff, Region I) in his aforementioned Affidavit states: "A dropped cask will not cause a release of radioactive material into the air." See Exhibit A attached hereto. I concur with this statement and Dr. Resnikoff has not illustrated how this scenario would release radioactive material into the air. One of the requirements for a "sealed source" used in an irradiator under 10CFR36 is that the radioactive material is as nondispersible as practical and that it is as insoluble as practical. The sealed sources used are fabricated from metallic slugs or wafers of cobalt-60 that is nondispersible and insoluble in water. They are plated in non-radioactive nickel and then doubly encapsulated in leak tested stainless steel tubes. These regulatory provisions were developed to assure that the use of cobalt-60 in an irradiator does not lead to air borne contamination.

Dr. Resnikoff's assumption that the source suppliers for both CFC Logistics and Pa'ina Hawaii are the same is correct. At present, the two suppliers, supply sources to around 160 commercial irradiators throughout the world (over 50 in the United States). About 260 million curies are presently in use in

these irradiators. One or both of these suppliers will supply the sources and will be responsible for the loading of the sources into the Pa'ina Hawaii Genesis II. The sources have a Certificate of Registration as stated in the License Application. Both suppliers are specifically authorized by the NRC to load and unload sources.

The referenced NPI handling of cobalt-60 is a different operation from that of Pa'ina Hawaii. Further, as stated in John Kinneman's Affidavit, "...the staff does not have information which indicates that a cask has been dropped at an irradiator facility." See Exhibit A attached hereto. Dr. Resnikoff has not illustrated that the proposed equipment and facilities are not adequate to protect health and minimize danger to life or property. His insertion of his additional words, "[must be]", indicate that he wishes to modify 10CFR30.33(a)(2).

I have quoted John Kinneman to illustrate that the NRC does review the types of items that are of concern to Dr. Resnikoff. It is important to note that although there is some similarity to reactor operations many differ. All 10CFR36 irradiators have commonality on how sources are loaded and unloaded.

14. The hoists are NOT designed to stop where the sources are located. I believe that Dr. Resnikoff meant to say that the hoists are not designed to physically prevent travel over the point where the sources are located.

The movement of a shipping cask is very closely monitored through administrative control, which includes training and supervision. Typically there are about five trained individuals directly supervising this operation. The total movement by hoist of the shipping cask is about 12 feet horizontally. The movement of the hoist is very slow. It is inconceivable that the cask would be accidentally moved over the sources. Every time sources were loaded into the CFC facility, the NRC had inspectors present to directly supervise the operation. The movement of the cask is under the safety control of a person

authorized by the NRC. There is no Commission rule that the hoists be designed to stop prior to potential movement over the sources.

15. The following is part of John Kinneman's Affidavit addressing this specific issue. The procedures for Pa'ina Hawaii are the same as those for CFC Logistics:

> "CFC Logistics has procedures to deal with emergencies during loading and unloading of sealed sources." "The emergency procedures presented by CFC are in accordance with the requirements in 10CFR36.53. Condition 17 of the license requires that at least one specialist who is authorized by another NRC or Agreement State license to conduct such operations be present in the facility and directing operations when sources are being added or removed. This person will be qualified to deal with emergencies. Considering the fact that the cask is qualified for transportation accidents, it is unlikely that dropping a cask will result in an increase of radiation levels. Therefore, it is most likely that if emergency responders were needed due to a dropped cask, it would be for personnel injury. In that case, CFC or contractor personnel would provide direction to control the exposure of emergency responders to radiation, if that were necessary. A dropped cask will not cause a release of radioactive material into the air." See Exhibit A attached hereto.

Although "Condition 17" was specific to CFC's License, it is presumed that it will also be specific to Pa'ina Hawaii's License because Pa'ina Hawaii has not provided the information required of 36.13(g) to perform this task without an Authorized Vendor.

I concur with John Kinneman's assessment. Further, emergency telephone numbers will be posted as required, (including the NRC's telephone number). I disagree with Dr. Resnikoff that there is no training or drills. There is training of both the staff and emergency responders and there are safety drills. The training primarily addresses how to prevent an accident, and how to respond to

generalized emergencies (e.g. suspected radiation overexposure). Training procedures are outlined in the non-redacted portion of the License Application and further defined in NUREG-1556, Vol. 6, Appendix G. Safety drills are selected by the RSO for various scenarios, and carried out as closely as possible to actual conditions.

16. Dr. Resnikoff has not illustrated how a cobalt-60 cask will be damaged and material released. To my knowledge, there has never been a release of cobalt-60 from a Type B shipping cask due to an accident. Cobalt-60 is transported to commercial irradiators on a daily basis. I commend Dr. Resnikoff's efforts to utilize inert gas in shipping containers. Cobalt-60 is shipped to the site utilizing inert gas. All of that being said, this is not part of the Application or the review of an Application for a Material License. Shipping casks, addressed in 10CFR71, are common to all irradiators, and are independent from Pa'ina Hawaii's License Application.

I do not have knowledge of any incident in Connecticut in 1980 concerning irradiated fuel. Please note that "irradiated fuel" is not cobalt-60 in the form of "special form" "sealed sources".

17. The applicant HAS shown that the system will not overheat.

The thermal projections were redacted by the NRC staff under the Commission's policy, NOT by Pa'ina Hawaii.

The helium system surrounding the Co-60 pencils is static.

The heat will be dissipated through the helium to the plenum walls and then into the pool water.

The temperature of the gas in the plenum may be monitored on a non-continuous basis. However, the energy emitted from the sources is constant (except for slow decay) and the conditions effecting

heat transfer are effectively constant. Thus, there is no scenario, based on physics that the temperature can significantly increase or decrease at any given time.

Dr. Resnikoff has not explained in any way how the plenum can "overheat".

The sources are required to be able to withstand a temperature of 600 degrees Celsius by the NRC, and are rated to a minimum of 800 degrees Celsius by the manufacturers prior to any failure of the encapsulation. Even a failure of encapsulation would not necessarily lead to a release of radioactivity into the air. To release material to the air would require the temperature to be around 2,900 degrees Celsius to vaporize the cobalt metal. This is an impossibility based on the decay heat energy available to the sources as designed. In a worse case situation, it is calculated that the sources could reach a temperature of 278 degrees Celsius in the Genesis II irradiator. These sources are designed to be stored in air, water or a combination of air and water. Dr. Resnikoff was challenged at a public meeting by a technical assistant to the ASLB to calculate and demonstrate that there is any potential for overheating of the sources as used at the CFC facility. To my knowledge, Dr. Resnikoff has not yet performed these calculations, and therefore he has not illustrated that there is ANY overheating potential.

Dr. Resnikoff has not explained how the cobalt-60 would be released to the air.

Dr. Resnikoff has not explained how the ion exchange resins would become highly radioactive.

Shipping any radioactive materials to a low-level radioactive waste landfill IS NOT contrary to 10CFR36.57(e). This rule is only for "unrestricted release". A low-level radioactive waste repository is a "restricted release".

The License Application specifically addresses a shutdown of the water circulation system in the

event that the system exceeds 1mR/hr.

18. Dr. Resnikoff is correct that the pencils will be loaded underwater with long handling tools.

The plenum will fit over the rack and the helium will be supplied to displace the water. There is no "pump". The helium is supplied as a compressed gas in commercial gas cylinders.

The cobalt will heat up. The heat is transferred to the encapsulations and any water on the surface of the sources will evaporate. This will occur every time the plenum is opened for whatever reason (e.g. six month leak check). It will probably happen two or three times a year. In a typical Category IV irradiator (most commercial irradiators are Category IV), the sources go through this process several times each day for the life of the source, since they must lift the source out of the pool to perform the irradiation. The sources used by Pa'ina Hawaii (Category III) are identical to those used by almost all Category IV irradiators.

Dr. Resnikoff seems to believe that the evaporation takes place on the cobalt-60. THIS IS NOT THE CASE. The evaporation of the water takes place on the outer stainless steel encapsulation. The cobalt-60 is always dry. There is no evaporation process to allow radioactive material into the helium environment or the pool water.

REVISS HAS NEVER "expressed concern about the potential damage to the Co-60 pencils <u>in this evaporation process</u>". [Underlining added for emphasis.] Dr. Resnikoff does not understand the previous concerns of REVISS. However, in any event they are moot, because REVISS' concerns were specific to the Genesis I and do not apply to the Genesis II due to the change from an active air system (Genesis I) to a passive helium system (Genesis II). Both source suppliers have reviewed the Genesis II system and have expressed no concerns.

19. I agree with Dr. Resnikoff that it is not clear who performed the thermal calculations for the Genesis II. For clarity, I performed these thermal calculations. These were reviewed by my engineers. Similar calculations were submitted to the NRC during the CFC licensing process. These similar calculations, and the technique employed, were approved by the NRC.

REVISS DID NOT provide the calculations for CFC Logistics. Further, Dr. Resnikoff has full knowledge that I provided the calculations.

20. GRAY*STAR, Inc. is supplying the irradiator and the components of the irradiator not including the sources. GRAY*STAR has vendors who fabricate various components of the irradiator.

REVISS and Nordion are the suppliers of the cobalt-60.

The NRC handles the quality assurance of sources independent of a Materials License. Their evaluation is performed under 10CFR32.210. The "spelling out" of the quality assurance program is applicable to an application for a Certificate of Registration under 10CFR32.210. It is outside of the review of an Application for a Material License. This challenge by Dr. Resnikoff should have been performed at the time of the specific review of the source suppliers' application.

The source supplier will supply certification that a leak test has been performed within six months of the receipt of the cobalt-60. The Redacted Application does provide for routine six month leak tests. The procedures are in accordance with 10CFR36.59(a).

Pa'ina Hawaii does not know what country manufactures the cobalt-60, nor do they know where the material is encapsulated.

21. I cannot discuss security issues in this forum unless directed by the Presiding Officer of the

ASLB. These issues are directly tied to "Safeguards Information" and I do not believe that a discussion at this point would be appropriate for security issues. It is my understanding that everyone is responsible for safeguarding certain information even if they do not have an NRC license.

Dr. Resnikoff is incorrect on the dose rate of one curie of cobalt-60 at one meter. He is off by a factor of 1000. The Handbook of Physics and Radiological Health, Table 6.2.2 provides the information in terms of mSv/hr per MBq, not in mRem/hr. Dr. Resnikoff would have to make the conversion and apparently made a mathematical error.

The unit is designed for a maximum of 1 million curies. Pa'ina Hawaii is asking for a maximum loading of 1 million curies in their License Application.

Actually, the maximum loading of any one source would not likely be 17,000 curies. This amount is specified in the Certificate of Registration for REVISS' sources as a maximum. A typical number for a brand new source is about 10,000 curies per source. Over time, the sources lose their strength due to decay. In 5.27 years they only have ½ of the original curie content.

Dr. Resnikoff's claim that the unit will hold up to 256 sources is incorrect. It has 705 source positions available for positioning.

22. I consider this issue to be a matter of security and do not believe that this is the appropriate forum for discussions on security, unless so directed by the Presiding Officer of the ASLB.

From a technical point of view, the article provided does not supply enough information to determine an assessment, and I believe that their "Assessment" is simply self-serving conjecture. For example, they claim that a typical source pencil is "about one inch in diameter and one foot long. This is not true. The pencils are a maximum of 0.44 inches in diameter (the cobalt-60 itself is significantly less in

diameter) and a maximum of 17.8 inches long. This pseudo analysis does not claim the number of curies within each pencil; however, Dr. Resnikoff claims that the number of curies used in the study is 17,000. The article also claims that their conclusions are based on a comparison with the Chernobyl disaster. It does not discuss the obvious differences between Russian reactors and 10CFR36 irradiators. For example, it fails to analyze the difference between nondispersible cobalt-60 dispersion and the dispersion of "dispersible" materials present at Chernobyl. I find this article inaccurate, irrelevant and unsupported.

23. Dr. Resnikoff has not explained just how Tsunamis or Hurricanes would have an effect on the radiation safety of the irradiator.

Damage to the building or loss of electricity from a hypothetical wave will not have an effect on radiation safety. The unit was specifically designed with this in mind. Further, the NRC considered these types of events during their rulemaking for 10CFR36:

> "The NRC considered whether there should be siting requirements dealing with possible flooding of the irradiator or tidal waves. The NRC decided that no siting requirements with respect to possible flooding or tidal waves could be justified on a health and safety basis because flooding of the facility would not destroy the integrity of the shielding walls."

Although the Genesis II does not use "shielding walls" it does use water shielding which would not be compromised by a flood or tsunami.

The safety of the irradiator is not dependent upon the supply of electricity. The safety of underwater irradiators is passive. As such, they do not require any electricity to maintain safety. Radiation monitors to monitor safety either have battery backup or are solely powered by batteries.

The site for the irradiator is NOT in a Tsunami Flood Evacuation Zone as alleged. According to a letter dated May 10, 2005 from the State of Hawaii Department of Transportation to Michael Kohn:

> "This is in response to your fax dated May 4, 2005, asking whether lots #011109 and 011108 are in a tsunami flood evacuation zone.
>
> "The answer is no, despite the phone book evacuation guide, which is an overly conservative plan to minimize loss of life anywhere near a coastline."

Further:

> "The south shore of Oahu has never sustained more than a 3' wave from any tsunami since 1837."

Further:

> "Our Environmental Impact Statement of August 1991 concludes a section on Natural Hazards with the statement that 'It is not likely that high waves, a tsunami or a hurricane would affect the project sites covered within this EIS.' The project sites included South Ramp Development." See Letter of Benjamin Schlapak, May 10, 2005, a true and correct copy of which Letter is attached hereto as Exhibit C.

The Pa'ina Hawaii irradiator is sited for the South Ramp Development area.

If there were flooding, for any reason, even if capable of entirely washing the building away, there would not be a release of radioactive material or radiation from the irradiator that would endanger the public.

24. I do not accept or deny Dr. Resnikoff's data on aviation incidents at Honolulu Airport except to say that he has apparently illustrated that it is safer to work at an irradiation facility than at an airport.

During the rulemaking by the Commission of 10CFR36 they specifically reviewed aviation accidents. Fed. Reg. Vol. 58, No. 25 states:

> "The NRC considered whether there should be a prohibition against locating irradiators near airports because of risk of radiation overexposures caused by an airplane crash. The NRC has concluded that a prohibition against placing an irradiator where other types of occupied buildings could be placed is not justified on safety grounds. The radioactive sources in an irradiator would be relatively protected from damage because they are generally contained within 6-foot thick reinforced-concrete walls and are encapsulated in steel. Even if a source were damaged as a result of an airplane crash, large quantities of radioactivity are unlikely to be spread from the immediate vicinity of the source rack because the sources are not volatile. With this protection, the radiological consequences of an airplane crash at an irradiator would not substantially increase the seriousness of the accident. Therefore, NRC will allow construction of an irradiator at any location at which local authorities would allow other occupied buildings to be built." [Underline added for emphasis.]

The Genesis II irradiator is a below ground unit. As such, the sources are not in a direct path of a hypothetical airplane incident and are always located in a protected position beneath the ground. This was considered by the NRC at the time of 10CFR36 rulemaking.

25. It is not appropriate in a License Application to discuss transportation safety. Transportation of sources to and from the facility is the responsibility of the source suppliers. This discussion is misdirected and perhaps should have been proffered during the rulemaking for 10CFR71.

Dr. Resnikoff is wrong to assume that the sources will arrive by air. Air transport of the quantities in question is prohibitive because of regulations that severely restrict quantities that may be transported by air.

The sources will be transported by ship. This is a similar process to the transport of sources to commercial irradiators in the continental US by REVISS.

It is not clear that the sources will be transported through residential communities. However, this is a moot point because it is not part of the License Application process.

26. Dr. Resnikoff is under the assumption that Pa'ina Hawaii made the redactions. The redactions were made solely at the discretion of the NRC based on the policies of the Commission with no input whatsoever from Pa'ina Hawaii. Pa'ina Hawaii submitted the Application in total and did not ask for any material to be withheld from the public.

27. As stated above, none of the safety systems rely on electricity from a utility. There are only two systems to monitor safety, and they are powered by their own batteries. (The Area Radiation Monitors and the Hand Held Survey Meters.) The safety of the Genesis II is passive. This is true of Underwater Irradiators (Category III). Concerns over loss of electricity are specific to Panoramic Irradiators (not Underwater Irradiators). Panoramic Irradiators (Category II and IV) require that the source be moved to its "fully shielded" position in the event of a power loss over 10 seconds. In an Underwater Irradiator (Category III), the source IS ALWAYS in its "fully shielded" position and thus, this is not relevant. The Genesis II can be safely maintained indefinitely without utility power.

28. The application DOES NOT discuss the possibility of the loss of electricity supply in terms of overheating of sources, because: there is no electrically powered cooling system. Therefore, the non-

existent cooling system does not require power.

There is NO helium line connected to any of the bells.

There is a compressed air line connected to the bells to displace water within the bells. The compressed air is supplied by an electrically powered air compressor. In the event of a prolonged power failure, the compressor would stop supplying air to the bells. If this were to occur, the bells would still keep the product dry and all motion would cease.

If for any reason the product were to get wet, it is hard to conceive that it would become "water-logged" and released to the pool.

If for any reason the product or other "contaminants" were to be released into the pool the filter could become "clogged". Actually, all filters over time restrict water flow. It is part of the filtering process. Filter replacement is typically done about once a month and is a standard procedure.

During a filter change procedure the water circulation system must be turned off. If one were to try to change a filter when the water circulation system is running, not only would they get a face full of water, a pressure switch would automatically turn off the water pump.

Dr. Resnikoff is apparently implying that the pool water is radioactive. It is not. If it were, for any reason, the water pump would automatically turn off because of the 1 mR/hr. limit. If there was a loss of electricity, the electrically powered water circulation pump will obviously not operate.

If any foreign matter is in the pool that cannot be handled by the water filtration system, then the pool water would be cleaned through other methods (e.g. vacuum). There are procedures in place for the release of any material and/or water from the pool for unrestricted disposal.

There are no drains of any type on the irradiator. There are no drainage connections on the unit whatsoever. As stated in the Redacted License Application: "There are no discharges from the Water Purification System."

29. Thermal calculations were provided to the NRC.

There is no scenario possible that would lead to a cladding failure from decay heat. See earlier arguments.

The sources can be maintained safely indefinitely.

There are NO HEPA filters on a Genesis II irradiator.

The sources in question are designed for Category I, II, III and IV irradiators. They are specifically designed to be stored in air, in water and both for indefinite periods of time, with only ambient cooling.

30. There is NO helium line to the bells.

31. I appreciate Dr. Resnikoff's analysis on specific weapons used against shipping casks. I fear that it might also be appreciated by others. In any event, neither Pa'ina Hawaii, nor the License Application process, is involved with transportation security issues. This is a generic issue relating to the transport of all radioisotopes.

32. Once again, neither Pa'ina Hawaii nor the License Application process is involved with transportation security issues. This is a generic issue relating to the transport of all radioisotopes. It is interesting to note that radioisotopes other than cobalt-60 for commercial irradiators are routinely

shipped through Honolulu Airport.

I am not familiar with Dr. Resnikoff's work with the State of Nevada. It is interesting that he refers to solid slugs of cobalt-60 material encapsulated in two layers of stainless steel as a "spill". Cobalt-60 is not volatile, is nondispersible and is not soluble in water.

33. Neither Pa'ina Hawaii nor the License Application process is involved with environmental issues relating to transport. This is a generic issue relating to the transport of all radioisotopes.

34. The $113,000 financial assurance instrument discussed by Dr. Resnikoff is not a minimum or a maximum. It is what is dictated by the NRC for this type of irradiator. The rulemaking for this issue was made after the Genesis I irradiator was licensed by the NRC. Therefore, it is a fair assumption that it was considered by the NRC at the time of rulemaking. To request a change in this amount would require either a challenge to the rule or a petition for new rulemaking.

35. If there is a furtherance of these proceedings requiring Dr. Resnikoff to revise or provide additional testimony, I would expect to expand upon and refine my testimony after having an opportunity to review Dr. Resnikoff's supplemental testimony.

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 at Morris Township, New Jersey, on this 20th day of October, 2005.

Russell N. Stein
Vice President
GRAY*STAR, Inc.

Subscribed and sworn before me on this 20th day of October, 2005

Megan E. Bianchetti
Notary Public, State of New Jersey

MEGAN E. BIANCHETTI
NOTARY PUBLIC OF NEW JERSEY
Commission Expires 1/19/2010

My Commission Expires 01.19.2010

EXHIBIT A

September 9, 2003

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | Docket No. 30-36239-ML |
| CFC LOGISTICS, INC. | ) | |
| | ) | ASLBP No. 03-814-01-ML |
| (Materials License) | ) | |

AFFIDAVIT OF JOHN D. KINNEMAN

I, John D. Kinneman, being duly sworn, state as follows:

1. I am employed by the U.S. Nuclear Regulatory Commission (NRC), Region I, Division of Nuclear Materials Safety as the Chief, Nuclear Materials Safety Branch No. 2. I have held that or a similar management position since 1981. From 1975 to 1981, I was a Radiation Specialist in Region I. As Branch Chief I was responsible for overseeing the review of the application for an irradiator from CFC Logistics, Inc. and the subsequent issuing of NRC License No. 37-30804-02 to CFC Logistics (ML032390341). A statement of my professional qualifications is attached hereto as Attachment 1.

2. This document was prepared in consideration of Petitioners' Motion for Stay of Issuance of License dated September 4, 2003. Points made by Petitioners in support of their motion are addressed below.

3. Physical security for the CFC facility is described in the license application filed by CFC Logisitics. The applicant demonstrated facilities and procedures to comply with the relevant and applicable regulation, 10 CFR 20.1801. The application describes a restricted area (ML030630036, page 28) and the means for limiting access to that area to authorized individuals. In addition, the applicant presents procedures for accounting for sealed sources (ML030630036, page 58) as required by 10 CFR 30.41 and 30.51. These submissions demonstrate that the applicant has facilities and procedures to comply with the applicable regulations and provide the required level of security and accountability for the radioactive material.

   After the license application was filed, the NRC determined that a prudent response to the current threat environment requires additional security measures at irradiators. As part of the decision process, the Commission also concluded that implementation of the additional or compensatory security measures with complete compliance by December 3, 2003 would provide adequate protection for public health and safety and the common defense and security. These additional measures were imposed by Order because the Commission was not yet ready to determine what changes are required to the regulations. Petitioner does not assert that this irradiator is more attractive to criminals or terrorists than others and there

is no reason to suppose it would be, so that implementation schedule is adequate for this facility. In their Response dated September 5, 2003, (page 43) CFC states they will be in complete compliance with the Order by September 12, 2003. This representation by CFC will be subject to inspection by the NRC staff.

4. Accidental dispersion of cobalt-60 in air and water during loading, unloading and transportation is very unlikely. During transportation, the cobalt-60 will be contained in casks which are designed to survive accident conditions as required by 10 CFR 71.12, Subpart E of 10 CFR Part 71, 49 CFR 173.413, 173.416, 173.431 and 173.471.

The NRC has not reviewed the procedure for removing shipping casks from the truck which delivers them. However, the effect of any drop on the cask at this point will be less than the accident conditions addressed in the regulations cited in the previous paragraph. The cask which will be used to deliver the sources to CFC will weigh about 8000 pounds, rather than the 25,000 pounds asserted by Petitioners. Removal from the truck will not be done over the pool and, therefore, does not present a risk of dropping a cask on or into the pool. The facility hoists will be reconfigured to move each cask from the fork lift or other conveyance which brings the cask to a position near the pool (See email dated July 29, 2003, ML032100758, Attachment 2 to this Affidavit) and place them into the pool. The sources will be removed from the cask with long-handled tools after the cask is placed in the pool and opened. There is no requirement in 10 CFR Part 36 that the crane or hoist used to move a cask containing cobalt-60 into the pool be single-failure proof and the risk presented by this facility does not reasonably require that it be so. The risk of dropping a shipping cask is minimized by using hoists and other equipment which are qualified for the load and by administrative controls which prevent movement of a cask directly over the sources when they are in the pool (See letter dated July 22, 2003, ML032030333, item 3 on page 10 of 11, Attachment 3 to this Affidavit, and 10 CFR 35.39(c)). The sources used in this facility are registered pursuant to 10 CFR 32.210 and must meet the performance criteria in 10 CFR 36.21 which include impact, puncture and bending tests. Based on the fact that the sources must meet these criteria, it is not certain that the dropping of a cask on sources stored in the pool would result in the immediate release of radioactive material to the water. Further, the staff does not have information which indicates that a cask has been dropped at an irradiator facility.

5. CFC Logistics has procedures to deal with emergencies during loading and unloading of sealed sources (ML030630036, Procedures GI-206, GI-301 and GI-302). The emergency procedures presented by CFC are in accordance with the requirements in 10 CFR 36.53. Condition 17 of the license requires that at least one specialist who is authorized by another NRC or Agreement State license to conduct such operations be present in the facility and directing operations when sources are being added or removed. This person will be qualified to deal with emergencies. Considering the fact that the cask is qualified for transportation accidents, it is unlikely that dropping a cask will result in an increase of radiation levels. Therefore, it is most likely that if emergency responders were needed due to a dropped cask, it would be for a personnel injury. In that case, CFC or contractor personnel would provide direction to control the exposure of emergency responders to radiation, if that were necessary. A dropped cask will not cause a release of radioactive material into the air.

6. A prolonged loss of electricity will not result in a release of cobalt-60 from the doubly encapsulated sealed sources; a lack of electricity also presents no mechanism for promptly increasing radiation levels. During a time without electricity, the license would be unable to operate the facility (put product in or take it out), the alarms would not work, water would not flow through the filter and air would not flow through the plenum. However, short term (days or even weeks) lack of these systems, especially when the product is not being moved, would not cause a safety problem. The licensee can still observe the pool water level and add water if necessary (unlikely to be needed during a day or two blackout, nor would a large amount be needed over a period of weeks) and can use battery operated radiation monitors to check radiation levels. The seals on the plenum are held in place by an arrangement of springs and supporting pipes which do not depend on electricity or the air flow so the sources will not necessarily be in contact with the water during a loss of electricity. In any case, the double encapsulated sources are designed to be continuously in contact with either air or water or to cycle between the two.

7. A break in the compressed air line will not cause a release of cobalt-60 to the environment. This facility will not have free cobalt-60 in the water during routine operation. Therefore, even if the sequence of events postulated by the Petitioner were to occur, only a small amount of clean water would escape during the filter change and it would land in the surge tank (ML030630036, page 35).

8. Petitioner misstates the purpose of financial assurance. Financial assurance is for decommissioning from routine operations, which, in this case, is disposal of the sealed sources. While this facility does not require a decommissioning funding plan with a specific cost estimate, the concept of financial assurance is expressed in NUREG-1727 (ML003761169), Appendix F, page F-22, Section 3.1, "The site-specific cost estimate required for a DFP [Decommissioning Funding Plan] should represent the licensee's best approximation of all direct and indirect costs of decommissioning its facilities under *routine facility conditions*." [emphasis added] The Commission specifically decided not to include financial assurance for accidents in 10 CFR 30.35 (See 53 FR 24035). CFC Logistics is in compliance with the appropriate regulation, 10 CFR 30.35, and will be required to comply with any new rule on the implementation schedule included in the new rule.

The decommissioning financial assurance requirement should not be confused with the requirement that CFC (or any other NRC licensee) pay for the decommissioning of its facility and site. Financial assurance is only one part of providing reasonable assurance of decommissioning of the site. At the end of facility life, CFC will be required to meet the decommissioning and license termination criteria in 10 CFR 30.36 and Subpart E to 10 CFR Part 20.

9. The forgoing and attached qualification sheet are true and correct to the best of my knowledge and belief.

John D. Kinneman

Sworn to and subscribed before me
this 9th day of Sept. 18 2003

Notarial Seal
Roselyn H. Levin, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires Mar. 11, 2004
Member, Pennsylvania Association of Notaries

Attachment 1

Qualifications

John D. Kinneman

AB Biochemistry, Rutgers University 1971
Graduate work at Rutgers in Health Physics and Radiation Chemistry

Certified in Health Physics by the American Board of Health Physics

1971 to 1974 E.R. Squibb & Sons, New Brunswick, NJ

Chemist and Supervisor in regular and radiopharmaceutical quality control

1975 to 1981 Radiation Specialist in Region I, primarily Materials, over one year at Three Mile Island

1981 to Present Section Chief/Branch Chief, Region I Materials Program, All Areas.

Responsible for Licensing, Inspection, Incident Response and Investigation, Decommissioning.

Meritorious Service Award for Excellence in Health Physics 1993.

# ATTACHMENT 2

CFC Logistics, Inc.

Docket No. 03036239
License No. 37-30804-02
Control No. 132825

From: <GrayStarNJ@aol.com>
To: <asl@nrc.gov>, <jwood@hqm.com>, <sturner@cfclogistics.com>, <tom@hqm.com>, <rick.keiper@chlsystems.com>
Date: 7/29/03 11:01AM
Subject: Cask Handling - GENESIS

Dear Sattar,

Attached are a series of pictures illustrating the cask handling "spreader". I've also included a picture of myself standing over the pool on specially made planks.

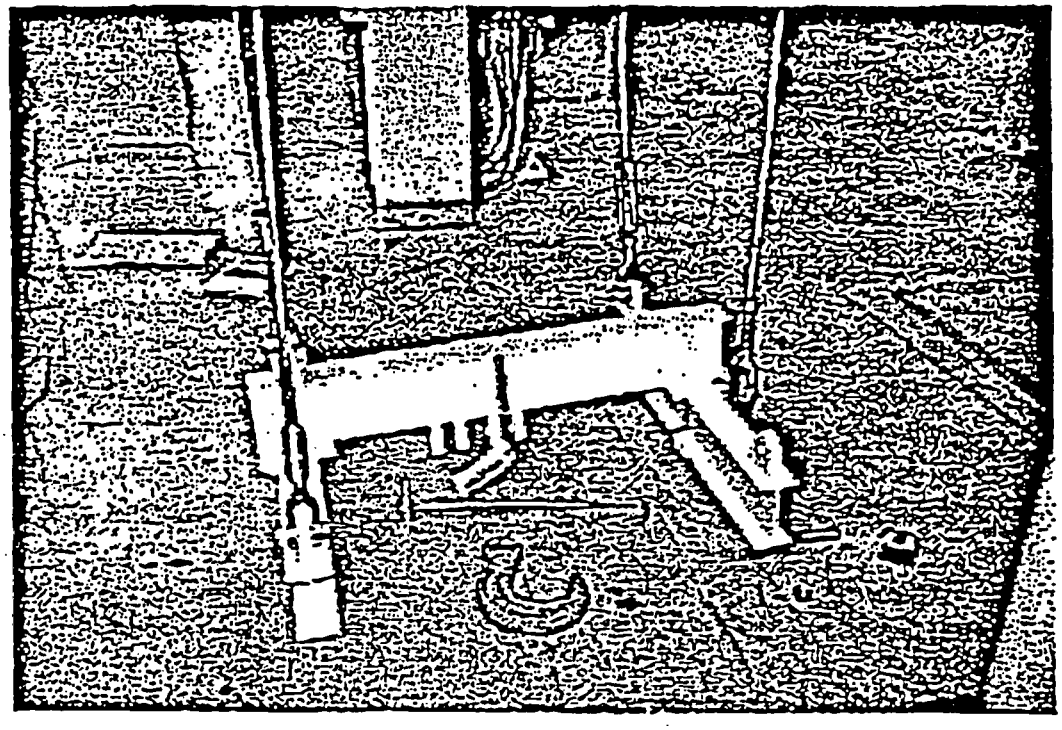
Please note that there are two pictures that are very similar. Those were taken as the hoist mechanisms were being moved on the trolley. It was easier to control than even I thought!

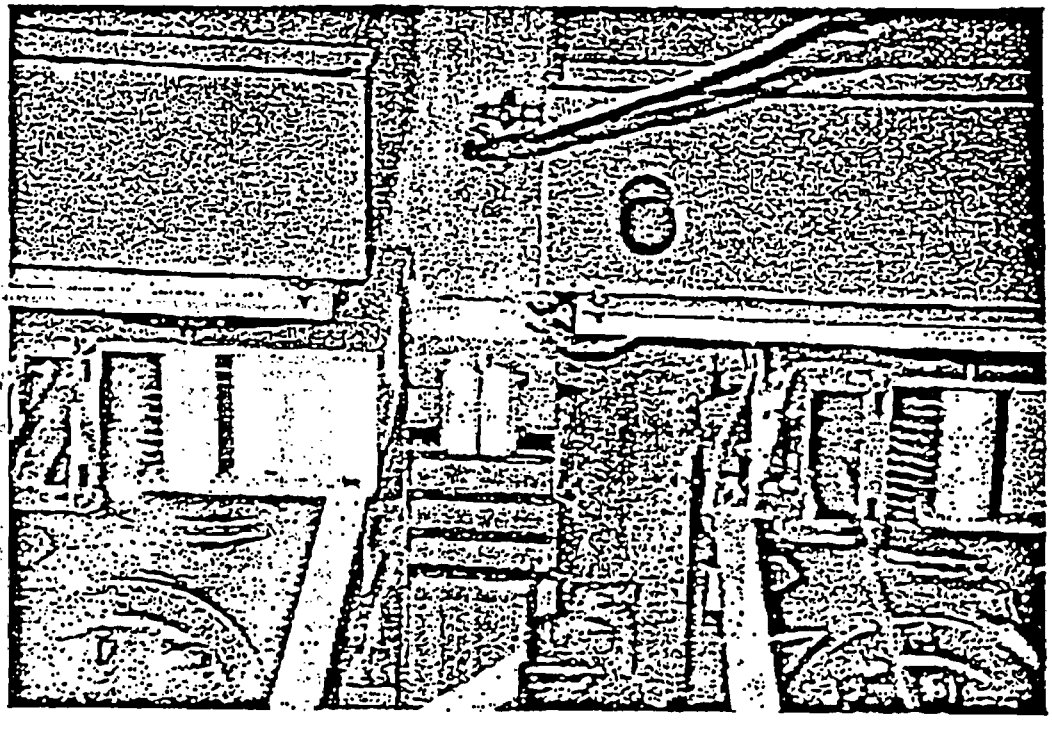
I've also included a picture of the "spreader" being assembled", a picture of the two hoist assemblies touching at the "bumpers" and one of the "spreader" fully assembled.

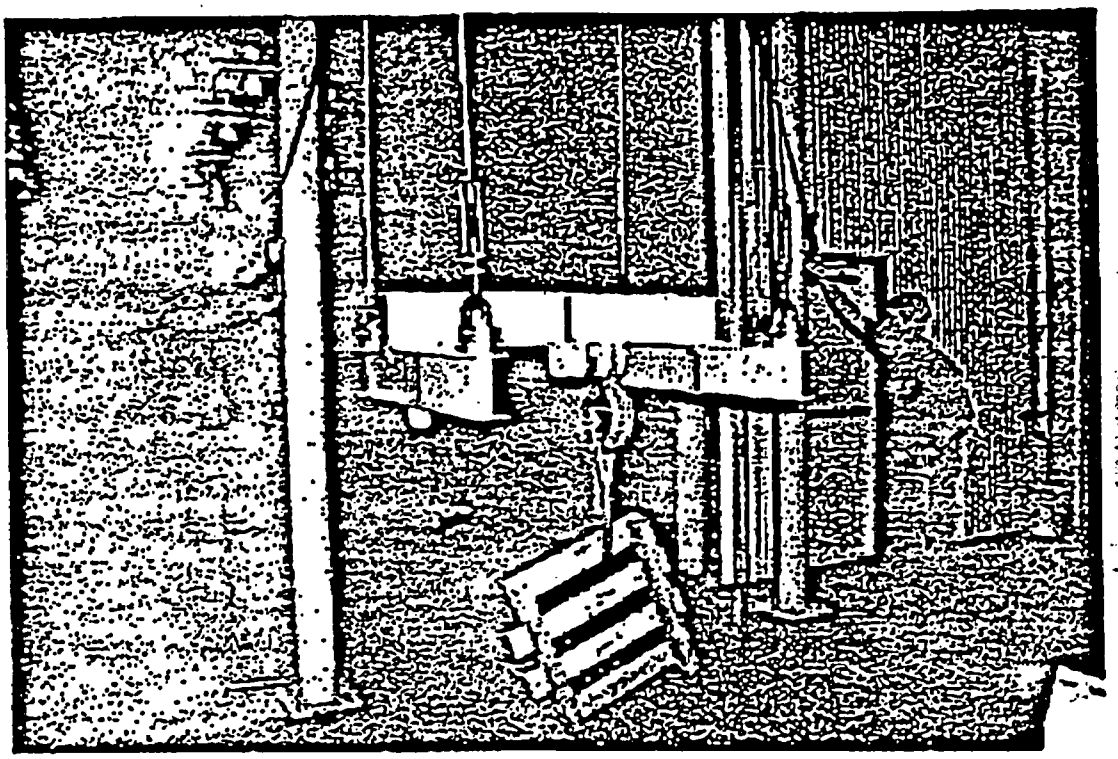
I have verified that the REVISS cask is approximately 7,000 pounds. Please keep in mind that the hoists are only lifting the weight of the cask as it enters the pool. The superstructure is removed prior to being lifted by the hoist mechanisms.

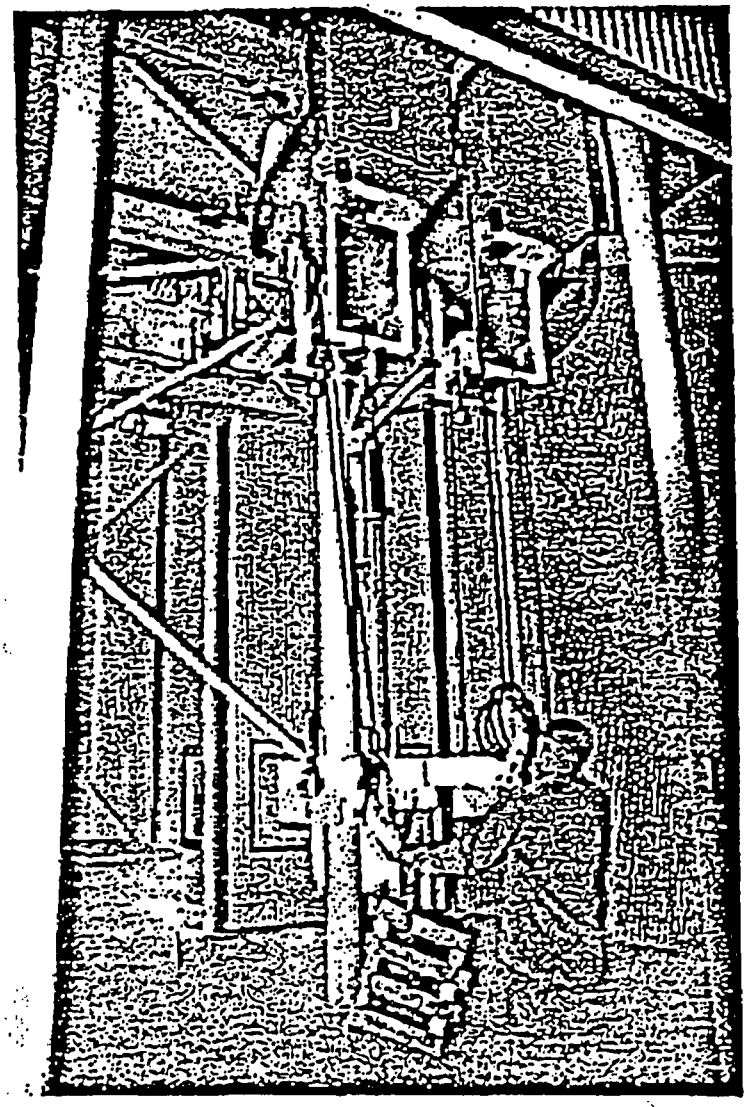
Harold, it was good talking to you. I appreciate that your name is unit of radiation.

Russell









Mail Envelope Properties
(3F258C25.B26 : 8 : 47910)

Subject: Cask Handling - GENESIS
Creation Date: 7/29/03 11:00AM
From: <GrayStarNJ@aol.com>

Created By: GrayStarNJ@aol.com

Recipients
nrc.gov
kp1_po.KP_DO
ASL (Sattar Lodhi)

chlsystems.com
rick.keiper

hqm.com
tom
jwood

cfclogistics.com
stumer

Post Office
kp1_po.KP_DO

Route
nrc.gov
chlsystems.com
hqm.com
cfclogistics.com

| Files | Size | Date & Time |
|---|---|---|
| MESSAGE | 892 | 07/29/03 11:00AM |
| Part.001 | 1075 | |
| 021_21.ZIP | 257876 | |
| Mime.822 | 356898 | |

Options
Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

# ATTACHMENT 3

CFC LOGISTICS

Tuesday, July 22, 2003

John Kinneman
Nuclear Regulatory Commission
Region 1
475 Allendale Rd.
King of Prussia, PA 19406-1415

Docket No. 0303629
Control No. 132825

License No. 37-3080402

Dear Mr. Kinneman:

Enclosed please find the response to your request for additional documentation regarding the design and safety features of the Genesis irradiator that had been previously discussed with representatives from the NRC on former site visits to our facility and to the fabricator.

As you will see, all parties involved in the design, fabrication and installation of the irradiator have taken significant measures from the beginning to ensure that we have eliminated any possibility of the bells causing a problem. We have the utmost confidence in the safety of the equipment operations, and are happy to provide you with this additional information to substantiate its safety.

Sincerely,

Jim Wood, President
Sharon Turner, Radiation Safety Officer

CFC LOGISTICS, INC
4000 AM Drive, Quakertown, Pennsylvania 18951 (T) 215.529.1500 (F) 215.529.0214

"Tide-Through Excellence"
215-723-7224 FAX: 215-723-8115
WWW.CHLSYSTEMS.COM

July 21, 2003

Sharon Turner
CFC Logistics, Inc.
4000 AM Drive
Quakertown, PA 18951

Dear Ms. Turner:

This is in reference to the problem of the hoist cables breaking. This was a concern to CHL during the design of the Pool, the Plenum, and the Hoist Assemblies. Design standards were followed in the design of the Hoist Assembly to insure that a cable never does break. In addition to the design of the hoist, an annual inspection of the hoist will be performed that will include an inspection of the cables to identify any cables with broken strands. Any cables that are found to have broken strands would be replaced before the hoist is returned to service. Tests were done on three different cable assemblies to prove out the swaging of the fittings and the ultimate break strength of the cable itself. The break strength test showed that the cable itself failed at 24,410 lbs. for a single cable. (See test results attached.) The maximum weight of the bell and cart with a full load of product is less than 8,000 lbs. This means that if one cable were to break the other cable would be able to support the entire load with a safety factor of at least 3. The standard safety factor for Under Hook Applications is 3.5:1. For this discussion we will consider three different scenarios where one of the hoist cables breaks.

Given the design of the hoist and the planned routine inspections, CHL feels confident that a cable breaking is something that will not happen. However, many different scenarios were considered during the design of the Pool, and Plenum Assemblies and these three scenarios of cables breaking were among these scenarios. These three different scenarios are addressed below. All three cases are when the bell is at some point either partially or fully over the pool. The controls were designed so that all movement of the bell over the pool area is done by the PLC in an Automatic Mode. This was done to eliminate the possibility of operator error of the bell movement over the pool area. This also makes it possible to precisely control the height and position and speed of the bell at all times when it is over the pool area. By minimizing the height of the bell over the pool, the effect of a cable breaking when the bell is over the pool is also minimized.

1. The case where the bell is at some point between the Staging Position and the Pool 1 Position when one cable breaks: This would result in one side of the bell falling about 3 inches before contacting the top ledge of the pool. If the center of gravity of the bell were far enough outside the pool the bell would glance off the outside corner of the top ledge of the pool and the bell would come to rest above the floor suspended by the other cable. If the center of gravity of the bell were somewhat centered over the ledge of the pool one side of the bell would drop about 3 inches and came to rest on the ledge of the pool. If the bell were closer to the Pool 1 Position one side of the bell would glance off the inside corner of the top ledge of the pool and the bell would come to rest at some diagonal position with the side of the bell and bottom of the bell being supported by the top ledge on opposite sides of the pool.

In all of the above cases the point of contact between the bell and the pool would be the top ledge of the pool. The top ledge of the pool is formed out of ½" thick stainless steel plate and is laid over and welded to the sides of the pool which are also ½" thick steel plate. The space between the inside wall and the outside wall of the pool is filled with 6" of poured concrete which also serves to support the center of the top ledge. In addition to the concrete, there are also steel I-beams running vertically the depth of the pool, sandwiched between the inside and outside steel plate walls, welded to both. The damage that would result to the top ledge of the pool would be some scratching, possibly some very minor denting, but certainly no damage to the walls of the pool that could cause a leak in the pool.

"Life" "simple Excellence"
215-725-7288 FAX:215-725-0115
WWW.LSYSTEMS.COM

2. The case where the bell is at Pool 1 Position when one of the cables breaks: This would result in one side of the bell falling with the bell coming to rest at some diagonal position with the side of the bell and the bottom of the bell being supported by the inside corners of the top ledge of the pool. The damage that would result to the top ledge of the pool would be some scratching, possibly some very minor denting, but, again certainly no damage to the walls of the pool that could cause a leak in the pool.

3. The case where the bell is at some point between Pool 1 Position and Pool 2 Position: This would result in one side of the bell dropping about 3" and contacting the top of one of the bumper blocks that is mounted to the lock bar over the center of the pool. The bumper block is relatively narrow so it is unlikely that the bell would come to rest balanced on top of the bumper block. It is much more likely that the bell would roll toward either Pool 1 Position or Pool 2 Position with the bell coming to rest at some diagonal position with the side and the bottom of the bell being supported by the inside corner of the top ledge of the pool on the one side and some combination of the lock bar and top ledge on the other side of the pool. The lock bar would not be damaged by the weight of the bell contacting it. It is designed to be able to support 17,000 lbs. at the point where the bumper block is attached. (One side of the bell and cart with a full load of product only weighs about 4,000 lbs.) But even if the lock bar were bent this would not create any additional load on the plenum since the load post assembly is isolated from the lock bar and was intentionally designed this way.

The damage that would result in this third case would be limited to some scratching of the top ledge, and possibly some very minor denting of the top ledge. No damage should occur to the lock bar, and certainly no damage to the plenum or the pool walls that could cause contamination of the pool or a leak in the pool.

If I can be of any further assistance in this matter please contact me. Thank you.

Sincerely,

Rick Keiper
Sr. Engr.
CHL Systems, Inc.

# I & I SLING INC.

2526 MARKET STREET • P.O. BOX 2423
ASTON, PA. 19014
TEL: 800-876-3830 • 610-485-8500
VISIT: www.iandisling.com

Date 4-14-03

| | | | | |
|---|---|---|---|---|
| 1402-A EAST MOUNTAIN ST. KENNETT SQUARE, PA. 19348 TEL: (610) [illegible] | 202 A NORTH MAIN ST. BURNSVILLE, MN. 55337 TEL: (952) [illegible] | 3625 TELEGRAPH RD. LORTON, VA. 22079 TEL: (703) [illegible] | 74-B SHAWMUT RD. CANTON, MA 02021 TEL: (781) [illegible] | 10615 LEXINGTON DR. KNOXVILLE, TN 37932 [illegible] |

ISO 9001

This to certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Such test being applied to each leg if a multiple leg sling.

Customer CLAYTON H LANDIS CO INC Ord.# 56765

No. of Slings 3 ea. skt assys Description 1/2" x 38'11-1/8" 6x19 IWRC

The proof test load applied is twice the rated working load. The rated working load is 4550 pounds Mike at 90 degree angle to the load. Do not exceed rated load!

Wire Rope _____ Manufacturer _____ Reel # _____

Fittings / Attachments: _____ Manufacturer _____ Manufacturer

304 S/S with #651 fitting one end - DWG 33248-620-000

The above described sling or slings is or are warranted to material and workmanship. The Seller's liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to it and which its examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repair, alteration, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

This warranty is expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Definitions, Cautions, and Instructions covering the purchase and use of slings", as printed on the reverse side of this certificate.

I & I SLING INC.

By _____ Inspector

I & I SLING INC.
2626 MARKET STREET • P.O. BOX 2423
ASTON, PA. 19014
TEL: 800-874-0583 610-485-8500
VISIT: www.iandisling.com

Date: 4-17-03

| | | | | |
|---|---|---|---|---|
| 3424 EAST MOUNTAIN ST. STRASBURG, PA. 17579 TEL: (717) 687-7551 | 212 A NORTH MAIN ST. BURNELL, PA. 15110 TEL: (724) 352-2300 | 9000 TELEGRAPH RD. LORTON, VA. 22079 TEL: (703) 550-9400 | 7540 SHANKIN RD. CANTON, MA 02021 TEL: (781) 575-0099 | 9616 LEXINGTON DR. KNOXVILLE, TN 37923 TEL: (865) 671-0551 |

ISO 9001

This is certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Each test being applied to each leg if a multiple leg sling.

Customer: CLAYTON W LANDIS CO INC Ord.# 56765

No. of Slings: 3 ea SKT ASSYS Description: 1/2" x 3'12-1/4" Ex19 IWRC

The proof test load applied is twice the rated working load. The rated working load is 4560 pounds/tons at 90 degree angle to the load. Do not exceed rated load!

Wire Rope: _____ Manufacturer _____ Rated #

Fittings / Attachments: _____ Manufacturer _____ Manufacturer

304 S/S WITH 7653 fitting one end - DNC 33248-622-000

The above described sling or slings is or are warranted in material and workmanship. The Seller's liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to it, and which its examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repairs, alterations, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

This warranty is expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Definitions, Cautions, and Instructions covering the purchase and use of slings", as printed on the reverse side of this certificate.

I & I SLING INC.

By: _____ Inspector

I & I SLING INC.
2526 MARKET STREET • P.O. BOX 2423
ASTON, PA. 19014
1-800-874-3439 610-485-8250
IT: www.iandisling.com

DTM 4-14-03

1000-A EAST MOUNTAIN ST. KERNERSVILLE, NC. 27284 TEL: (910) 993-9134
702 A NORTH MAIN ST. BURNWELL, FL. 33130 TEL: (305) 466-4388
8404 TELEGRAPH RD. LORTON, VA. 22079 TEL: (703) 550-8303
79-B SHAWMUT RD. CANTON, MA 02021 TEL: (781) 575-0000
10610 LEXINGTON DR. KNOXVILLE, TN 37922 865-671-0051

ISO 9001

This is certify that I & I Sling Inc. has subjected the following sling or slings to a visual inspection and a proof test as applicable. Such test being applied to each leg if a multiple leg sling.

Customer CLAYTON M LANDIS CO INC Ord # 56765

No. of Slings 1 ea. skt assys Description 1/2" x 20.6" 6x19 IWRC 304 S/S

The proof test load applied is twice the rated working load. The rated working load is _____ pounds / tons at _____ degrees angle to the load. Proof proved rated load!

Wire Rope: _____ Manufacturer _____ Rated

Fittings / Attachments: _____ Manufacturer _____ Manufacturer

with #651 & #553 fittings - DWG 33248-524-00C
PULLED TO DESTRUCTION - BROKE AT 24410 lbs.

The above described sling or slings is or are warranted in material and workmanship. The Seller's liability is limited to replacing or repairing this sling or portion thereof which shall have been returned to Seller which in examination discloses to have been defective. The Seller shall not be responsible for the condition of the sling or any portion thereof, if any repairs, alterations, or heat treatment of the sling, or any portion thereof, has been made at any place other than the Seller's Service Center.

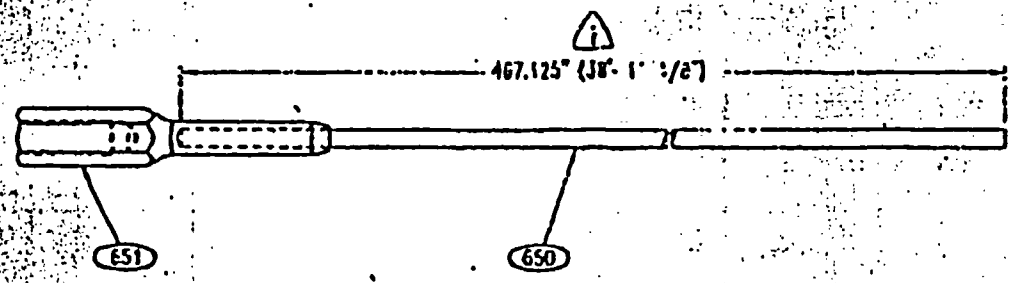
This warranty is expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities of the seller. The seller neither assumes nor authorizes any other person to assume for it any liability in connection with the sale or use of I & I Sling Inc. products.

This warranty is specifically subject to the "Guidelines, Cautions, and Instructions covering the purchase and use of slings", as printed on the reverse side of this certificate.

I & I SLING INC.

By _____ Inspector

| Mark | Revision | ECR # | By | Date | Check'd By | Appr'd By |
|---|---|---|---|---|---|---|
| 1 | LENGTH OF ITEM #650 WAS 451.375" (37'-7 3/8") | 34344-01 | CF | 3/24/03 | | |



NOTES:

1. EACH ASSEMBLY TO BE LOAD TESTED TO 9,120 LBS.

| | |
|---|---|
| 651 | 33248-621-651 |
| ITEM | [illegible] DWG |

| | | | |
|---|---|---|---|
| 650 | 1 | | CABLE ASSEMBLY [illegible]<br>[illegible] |
| ITEM | UNIT QTY | PART NUMBER &<br>DETAIL DWG<br>ASSEMBLY DWG | STANDARD DESCRIPTION<br>SPECIFICATION<br>REMARKS |

| | | |
|---|---|---|
| Drawn | C. Fehr | 3/11/03 |
| Designed | A. Landis | 3/11/03 |

**CLAYTON H. LANDIS COMPANY INC.**

Customer: CBI

Dwg. No. 33248-620-000 Rev. 1

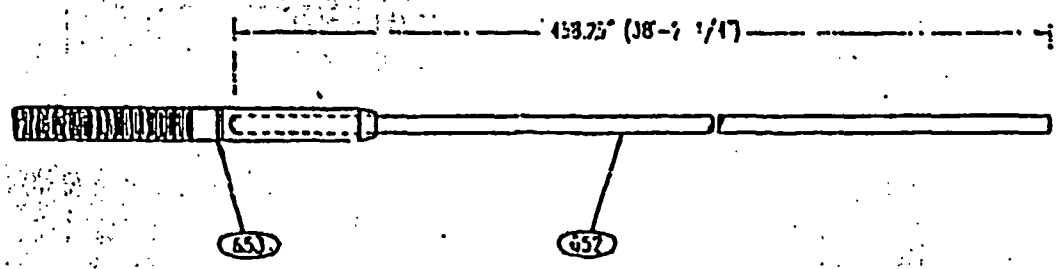
Job Number 34344 Size A

STANDARD TOLERANCES UNLESS SPECIFIED OTHERWISE

[illegible]

ALL DRAWINGS ARE RIGHTS [illegible] PROPERTY

| Mark | Revision | ECR # | By | Date | Checked By | Approved By |
|---|---|---|---|---|---|---|
| | | | | | | |




NOTES:
1. EACH ASSEMBLY TO BE LOAD TESTED TO 9,120 LBS.

| | |
|---|---|
| 653 | 31219-573-031 |
| ITEM | [illegible] |

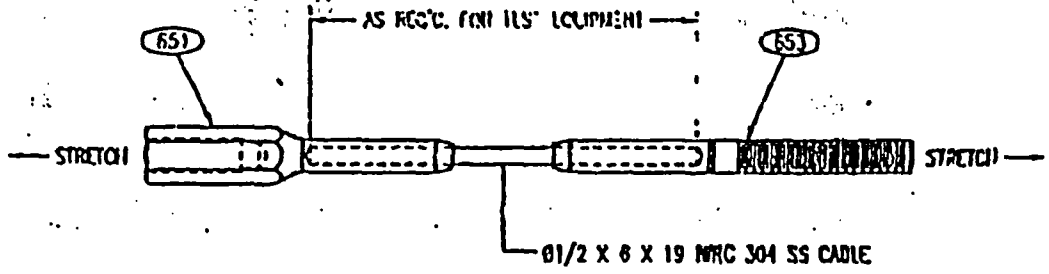
| | | | |
|---|---|---|---|
| 657 | J 3 | | [illegible] |
| REV | [illegible] | [illegible] | [illegible] |

| | | |
|---|---|---|
| C.May | 2/1/03 | |
| A.Cole | 2/1/03 | |

CLAYTON H. LANDIS COMPANY INC.

| | |
|---|---|
| Material | CH |
| No. | Renewal |
| Dwg. No. | 31219-573-000 |
| Rev. | 0 |
| Scale | 3/4 |
| Sheet | 1 of 1 |

| Mark | Revision | ECR # | By | Date | Checked By | Approved By |
|---|---|---|---|---|---|---|
| 1 | ADDED NOTES | 34318-01 | CF | 3/11/03 | | |




NOTES:

1. DESTRUCTIVE TEST BY STRETCHING TO FAILURE TO PROVE SWAGE SYSTEM.
2. (1) RECORD BREAK STRENGTH. SYSTEM FAILURE POINT MUST EXCEED 22,800 LBS. FOR CHL ACCEPTANCE OF ANY CABLE ASSEMBLIES UTILIZING TYPICAL FITTINGS AND/OR SWAGE PROCEDURE.
3. (1) CHL WILL RECEIVE DESTROYED ASSEMBLY.

| | |
|---|---|
| 653 | [illegible] |
| 651 | [illegible] |
| REF DWG | [illegible] |

| | | |
|---|---|---|
| C. [illegible] | [illegible] | |
| A. [illegible] | [illegible] | |

CLAYTON H. LANDIS CO. OF NY INC

[illegible]

[illegible]

30248-624-000

34344 | A | [illegible] | [illegible] | [illegible] | 1 of 1

2. The hoist inspection and maintenance schedule is also attached. If there is any deficiency in the hoist system viewed either during the working shift inspection or the annual qualified service technician inspection the deficient part will be replaced.

3. The sources are removed from the plenum and set off to one side prior to the cask being placed in the pool. Procedure OI-202 covers this. The sources are placed on a table that is on one side of the pool. The cask is lowered on the opposite side of the pool. The cask will never be raised or lowered over the sources.

7-21-03

# ANNUAL INSPECTION & MAINTENANCE SCHEDULE
for
# GENESIS I IRRADIATOR HOIST

Operators are trained to visually observe the hoist and trolley system during each working shift for abnormal function, wear and damage. A qualified service technician will perform the following inspections annually.

Inspection
- Check functioning of brakes and brake wear
- Check functioning of limit switches
- Check wire ropes for damage, wire breakage and wear
- Check rope mounts and guides
- Check swage fittings on wire rope ends
- Check turn buckles and bell lifting eye
- Check oil level in hoist gearbox
- Inspect trolley
- Lubricate gears of travel drives and wheels
- Check all bolted joints and welds.
- Check power supply systems, especially current collectors (check sliding contacts for wear)
- Check electrical switchgear and wiring
- Check bell make-up air supply system components
- Check paintwork; repair if necessary
- Check cart latching mechanisms
- Check cart wheels for wear and integrity

NUREG-1727

# NMSS Decommissioning Standard Review Plan

Manuscript Completed: September 2000
Date Published: September 2000

Division of Waste Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

## 3. DECOMMISSIONING FUNDING PLANS

A decommissioning funding plan (DFP) is a financial assurance demonstration that is based on a *site-specific cost estimate* for decommissioning the facility. The amount of the facility-specific cost estimate becomes the minimum required level of financial assurance coverage. Any licensee may use a DFP, but certain licensees *must* use a DFP, as discussed in Section 1.

Licensees who use DFPs must undertake the following actions, as summarized in Checklist 3.

- Prepare a site-specific decommissioning cost estimate (see Section 3.1)
- Determine the means that will be used to adjust the cost estimate and associated funding levels periodically over the life of the facility (See Section 3.2)
- Submit the required documentation (see Section 3.3)

### 3.1 PREPARING THE SITE-SPECIFIC COST ESTIMATE

In evaluating decommissioning cost estimates, the NRC considers the following factors:

- The completeness of the estimate (i.e., scope),
- The level of detail presented, and
- The reasonableness of the estimate (i.e., the accuracy and magnitude of estimated costs).

These factors are discussed briefly below. Sections 3.1.1-3.1.3 outline or describe the three basic parts of a cost estimate: the facility description, the estimated decommissioning costs, and key assumptions. Section 3 concludes with a series of cost estimating tables that can assist licensees in preparing decommissioning cost estimates that are likely to be acceptable to the NRC.

The site-specific cost estimate required for a DFP should represent the licensee's best approximation of all direct and indirect costs of decommissioning its facilities under routine facility conditions. The assumption that routine facility conditions will prevail at the time of decommissioning implies that the cost estimate need not consider a worst-case decommissioning scenario. Similarly, however, the estimate should not be based on a scenario that is more optimistic than would be consistent with routine facility conditions. By way of example, NRC believes it reasonable for decommissioning cost estimates to assume the following:

EXHIBIT B

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 27, 2003

Docket No. 03036239 License No. 37-30804-02

James Wood
President
CFC Logistics, Inc.
4000 AM Drive
Quakertown, PA 18951

SUBJECT: INSPECTION 03036239/2003001, CFC LOGISTICS, INC., QUAKERTOWN, PENNSYLVANIA

Dear Mr. Wood:

From February 13, 2003 through August 6, 2003, Sattar Lodhi, of this office conducted inspections of your activities related to the construction of the Genesis I irradiator at your facilities at the above address. On April 2, 2003, Suresh Chaudhary, and on July 22, and August 6, 2003, Harold Gray of Division of Reactor Safety accompanied Dr. Lodhi to review and discuss various engineering specifications and aspects of the planned irradiator. Information provided during various telephone discussions was also considered during the inspection.

The inspection consisted of evaluation of site characteristics, appropriateness of materials used in the construction and fabrication of components, the procedures followed in the fabrication of various components, adequacy of equipment for the intended service, and discussions with your engineering staff involved in fabrication and installation of various components of the irradiator. The inspections were conducted to verify that the completed facility can be operated safely and meets the applicable NRC requirements. The findings of the inspection were discussed with you and/or members of your organization during various stages of the inspection. A report summarizing the findings of the inspection is enclosed.

Within the scope of this inspection, we conclude the facility has been constructed in accordance with your application for a license.

No reply to this letter is required. In accordance with 10 CFR 2.790, a copy of this letter and the enclosed report will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at http://www.nrc.gov/reading-rm.html.

Your cooperation with us is appreciated.

Sincerely,

***Original signed by John D. Kinneman***

John D. Kinneman, Chief
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 030-36239/03-001

cc:
Marie Turner, Radiation Safety Officer
Commonwealth of Pennsylvania

# U.S. NUCLEAR REGULATORY COMMISSION
# REGION I

## INSPECTION REPORT

| | |
|---|---|
| Inspection No. | 03036239/2003001 |
| Docket No. | 03036239 |
| Licensee: | CFC Logistics, Inc. |
| Location: | 4000 AM Drive<br>Quakertown, PA 18951 |
| Inspection Dates: | February 13, 2003 through August 6, 2003 |

Inspectors:

Suresh K. Chaudhary — 08/19/03
Suresh K. Chaudhary
Reactor Engineer
Date

E H Gray — 8/20/03
Harold Gray
Senior Reactor Engineer
Date

Sattar Lodhi — 8/27/03
Sattar Lodhi, Ph.D.
Health Physicist
Date

Approved By:

John D. Kinneman — 8/27/2003
John D. Kinneman, Chief
Nuclear Materials Safety Branch 2
Division of Nuclear Materials Safety
date

Document Name: G:\Docs\Current\Insp Report\R37-30804-02.2003001.wpd
44562993

## EXECUTIVE SUMMARY

CFC Logistics, Inc.
NRC Inspection Report No. 03036239/2003001

CFC Logistics, Inc. has applied for an NRC materials license to possess and use sealed sources containing cobalt 60 in a pool irradiator at their Quakertown, Pennsylvania facility. The irradiator will be located at CFC's Quakertown refrigerated storage warehouse for storage of perishable food products. The application requests authorization to use sealed sources containing up to 1,000,000 curies of cobalt 60 in the irradiator. The irradiator will be used to irradiate food items, cosmetics, and pharmaceutical products.

The proposed irradiator is described in CFC's application dated February 19, 2003 (ML030630036). Inspection was conducted from February 13, 2003, to August 6, 2003, to review the fabrication, installation and testing of various components of the irradiator. Staff of the Division of Reactor Safety evaluated site preparation and the material and procedures used in the fabrication of the pool and other structures and found them to be in accordance with standard engineering practices. In addition, the seismic environment of the site and the effect of a seismic event on the facility were considered. The inspectors observed movement and operation of the irradiator components and the system functioned as expected. The inspectors also reviewed the hoists and load bearing components of the system.

The system is designed to meet applicable NRC requirements and has been built in accordance with specifications in the application. The completed concrete and steel structure conforms to the designs and drawings; construction procedures and process controls were adequately implemented to assure conformance to the design specified in the application. The irradiator installation appears to be well designed and well built. The system performed properly during pre-operational demonstrations and procedures appear to be adequate to assure safe operation.

While heavy load drops or seismic events are unlikely, engineering analyses indicate that such events will not result in a loss of source shielding or damage to the radioactive sources that would release cobalt 60 into the pool.

## REPORT DETAILS

### I. Organization and Scope of the Program

a. Inspection Scope

The scope of the inspection was to review the applicant's activities related to construction of a pool irradiator and plans for use of the irradiator upon completion.

b. Observations and Findings

CFC Logistics, Inc., (CFC) originally submitted an application dated January 30, 2003, for a license to construct and operate a pool irradiator at its facility in Quakertown, Pennsylvania. In the application, CFC stated that construction activities were underway. On February 6, 2003, during a telephone conversation with the proposed Radiation Safety Officer (RSO), and in a letter dated February 12, 2003 (ML030440043), Region I reiterated the provisions in 10 CFR 36.15 to CFC that any activities undertaken prior to issuance of a license are entirely at the risk of the applicant and have no bearing on the issuance of a license.

On February 13, 2003, an inspector visited the CFC facility in Quakertown, Pennsylvania, to discuss administrative deficiencies in its application dated January 30, 2003. During the visit the inspector noted that CFC had started preliminary construction work at the site.

Following the February 13 visit, the applicant withdrew the original application and submitted a revised application dated February 19, 2003 (ML030630036) that addressed the administrative deficiencies in its original application. The facility and CFC's activities have been reviewed against the February 19, 2003 application.

NRC inspectors visited the proposed facility on nine occasions to review construction activities and to evaluate various aspects of the design. Three of these visits included staff from the Division of Reactor Safety. Members of NRC Regional management were present during four visits.

## II. Management Oversight of the Program

a. Inspection Scope

The scope of the inspection was to verify effective oversight of the program by the applicant's management.

b. Observations and Findings

CFC Logistics, Inc., is a part of Clemens Family Corporation, and James Wood is the President of CFC Logistics, Inc. Activities within CFC are divided into three operations, namely, Warehouse Operations, Administrative Operations, and Irradiator Operations, and each operation has a manager. Thomas Clemens is the Project Manager for the irradiator project and is responsible for all aspects of construction of the irradiator facility. Marie Turner is manager of Irradiator Operations, and is also proposed to be the Radiation Safety Officer (RSO) named on the license. Other members of the Irradiator Operations staff are irradiator operators and material handlers. The RSO reports to the President of CFC and irradiator operators report to the RSO. There will be a Radiation Safety Committee (RSC) to provide supervision to the radiation safety program. Membership of the RSC will include the RSO, an additional management representative and an irradiator operator.

c. Conclusions

The applicant's management structure and the proposed oversight of its activities meet NRC requirements and guidance provided in Section 3 of NUREG 1556, Volume 6.

## III. Facilities and Equipment

a. Inspection Scope

The scope of the inspection was to verify that the facilities and equipment are constructed in accordance with the specifications described in the application and meet appropriate NRC requirements and that the applicant has appropriate operating and emergency procedures.

b. Observations and Findings

General Description

The facility is located in Quakertown, Pennsylvania. The facilities are described in the application dated February 19, 2003 (ML030630036), and letters dated April 22, 2003 (ML031210348), June 30, 2003 (ML031960588), July 8, 2003 (ML031900700), and

July 22, 2003 (ML032030333). These documents were reviewed by the NRC staff as part of the licensing process.

The irradiator (trade name GENESIS I) was designed by Gray*Star, Inc. Detailed engineering design and fabrication of all major components, including the electronic controls, were accomplished by Clayton H. Landis Company (CHL) at its Engineering Facility in Souderton, Pennsylvania. CHL contracted with an electrical engineer to develop the electronics and programmable logic controls associated with the irradiator and its operations, including the automated movements of product carriers (bells) into and out of the pool. In addition, CFC hired a third party engineer to witness and record key activities during construction and assembly of the irradiator.

The irradiator is located in an enclosed area within a large hall, one of several that comprise a cold storage facility, at the Quakertown site. The irradiator consists of a shielding pool which is largely below floor level. The radioactive sources will be placed in a source container (or plenum) at the bottom of the pool and will remain there during routine operation. A trolley and hoist system will lift product carriers, place them into the pool for irradiation and then remove them. The water quality in the pool is maintained by a circulating water purification system which draws water from the pool, runs it through a resin filtration system, and returns the water to the pool. The water circulation system is equipped to continuously monitor the conductivity of the pool water to assure compliance with 10 CFR 36.63. A radiation detector near the resin filter is designed to detect increases of radioactivity in the water.

The pool is a double-walled rectangular box prefabricated at CHL Engineering facilities. The application includes a diagram of the pool on page 47, and a copy of the diagram is shown in Figure 1 (also at ML03161087) of this report. The inner walls are made of ¼ inch thick stainless steel and the outer walls are made of ¼ inch thick carbon steel. The inner and outer walls are 6 inches apart and on each side of the pool structure the walls are joined by two 6-inch steel "I" beams welded lengthwise between them. The 6-inch wide space between the inner and outer walls was filled with concrete after the pool was placed on the concrete foundation. Within the emplacement at the site, the outer walls of the pool are surrounded by cement grout. The open edge of the pool is 42 inches above the floor which provides a barrier to prevent personnel from inadvertently falling into the pool. The main pool is connected to a smaller pool to hold water displaced by the product bells when they are lowered into the main pool.

The pool does not have any penetrations below the safe water limit level. Losses of water from evaporation and normal use will be made up by manually operating a valve. All connections to the pool are designed to prevent any loss of pool water due to siphoning. (10 CFR 36.33)

The source container or plenum is fixed at the bottom of the pool by a retaining mechanism. It is locked in place at the top of the pool by a locking bar and only authorized individuals have access to the key to unlock the retaining mechanism. The locking bar spans the width of the pool and divides the pool in half. The plenum

containing sealed sources remains fixed at the bottom of the pool during normal operations. Should it be necessary to raise the plenum, the sources will be removed from the plenum before it is raised. The plenum is lowered or raised mechanically only after unlocking the retaining mechanism and breaking a safety seal.

A diagram of the plenum is provided on page 49 of the application and Figure 2 (also at ML031610287) of this report. The plenum consists of 16-3 inch diameter vertical stainless steel tubes arranged in a vertical plane. Holders or racks containing the sources are inserted into these tubes. After loading, each tube is closed and sealed with a plug, and water is pushed from the tubes using compressed air, so that the sources are not in contact with pool water during operation. Then a pump continuously circulates air through the plenum tubes and a high efficiency particulate air (HEPA) filter. A radiation detector continuously monitors the air filter for radioactivity thereby providing a means to check for a leaking source. Another radiation detector monitors the radiation dose rate at the surface of the pool. The tubes that carry the air from the surface to the plenum and back to the surface are configured in such a way that there is no direct path for radiation from the sources to the surface. CFC plans to give particular attention to these tubes during the radiation survey after the sources are loaded.

Each of the three radiation monitors (air filter, resin filter and pool surface) have audio and visual alarms should the radiation level exceed the preset limit.

Procedures for operating the various systems, including the associated radiation safety and emergency procedures were reviewed.

Review of Construction Activities

An inspector observed the excavation for the pool on February 13, 2003. The field inspection report prepared by the applicant's independent engineering/geology company during excavation for the pool stated that the ground in the excavation was rocky and characterized the first 8 feet of excavation below floor surface as red/brown clayey gravel, followed by another 8 feet of layered red fractured shale in transition to penetrating 4 to 5 feet into the bedrock (red shale) at the bottom of excavation. The report also states that the bedrock is solid with no signs of fissure, and approved a bearing capacity of 2000 lbs/sq.ft.

Inspectors visited the both the irradiator facility and the fabrication shop at various times to verify the adequacy and acceptability of the construction material, techniques of construction, and conformance of the completed structure to design specification and drawings to those specified in the license application. An inspector reviewed the documentation for the foundation bearing capacity test, structural concrete inspection report, concrete mix design, and seven (7) and twenty-eight (28) day compressive strength tests for structural concrete and cement grout, and backfill concrete reports. The in-place pool, concrete floor around the pool, the pool upper structure, and the steel

frame for the mechanical hoist and monorail were also reviewed during assembly and when completed.

Inspectors also visited the nearby fabrication facility and observed various components being fabricated/assembled, including the completed double-walled pool, before it was placed in the excavation. An inspector reviewed the welding procedures and specifications, the nondestructive evaluation (NDE) of finished welds of the pool, and the qualifications of the welders, to verify conformance of the fabricated pool to the design specified in the application. The applicant's records indicated that the pool structure was successfully tested for leakage on July 11, 2002 (10 CFR 36.41(c)).

On July 22, 2003, and August 6, 2003, the inspectors visited the facility in Quakertown to review the performance of the completed mechanical components of the irradiator without radioactive sources installed. The inspectors observed complete cycles of the movements of the bells into and out of the pool and around the overhead monorail. An inspector observed a demonstration of response of the bell carriers in case of power failures on July 24, 2003, and noted that the bells came to a standstill when the electrical power to the system was turned off.

The inspectors reviewed operation of the water purification system on August 6, 2003, and noted that the conductivity of pool water was approximately 9.5 microsiemens/cm. 10 CFR 36.63 requires that the conductivity of the pool water remain less than 20 microsiemens/cm under normal circumstances.

c. Conclusions

Design, fabrication and assembly of irradiator components at CHL facilities, and construction at the site in Quakertown has been adequately supervised by the respective project managers.

Observations and comparisons of components to the engineering drawings and their description in the application confirmed the applicant's conclusions that the facility has been constructed in accordance with the specifications and drawings included in the application as supplemented by the additional submissions and in accordance with good engineering and construction practices. The completed concrete and steel structures conform to the design and drawings specified in the application; construction procedures and process controls were adequately implemented to assure conformance to the specified design.

Dry runs of the equipment observed during inspections demonstrated that the equipment functioned as designeded.

## IV. Radiation Safety Procedures

a. Inspection Scope

The scope of the inspection was to review the applicant's radiation safety procedures.

b. Observations and Findings

The inspectors discussed CFC's plans for conducting surveys during and following the loading of the sources and for evaluating the exposures of staff. The applicant plans to have a licensed organization supervise the source loading and provide training for their staff in the procedures for source handling and loading. The procedures for operating the pool water circulation system, the associated radiation monitor and the radiation monitors on the air system and near the pool were reviewed.

c. Conclusions

The applicant has adequate plans and procedures for conducting surveys during the loading of the sources and operation. The applicant's planned radiation survey instrumentation is adequate. Procedures for operating the pool water system and the radiation monitors are adequate.

## V. Emergency Procedures

a. Inspection Scope

The scope of the inspection was to review the applicant's emergency procedures.

b. Observations and Findings

The applicant's emergency procedures and plans for implementation were reviewed and discussed with CFC staff. The applicant's procedures address the applicable issues required by 10 CFR 36.53, including loss of electrical power, abnormal radiation levels and suspected personnel overexposure. The inspectors determined that the RSO is knowledgeable of the trigger levels for emergency procedures and actions that need to take place. The inspectors also reviewed CFC's actions to familiarize and train police and emergency responders. CFC indicated that they have held at least three sessions with police, local fire fighters, emergency management personnel, other local government staff and emergency medical responders (ambulance). Sessions included review of the characteristics of radiation, tour of the facility, discussion of responsibilities of CFC staff (RSO and operators) and other appropriate topics. Training for fire fighters, ambulance and emergency responders was greater than two hours in length. Training

for police was somewhat shorter. An inspector contacted management representatives for the police and fire fighters and confirmed the training occurred as stated.

c. Conclusions

The applicant has adequate emergency procedures and plans for implementation. The applicant intends to assure that local emergency workers and first responders have appropriate information concerning the facility.

## VI. Security Systems and Procedures

a. Inspection Scope

The scope of the inspection was to review the features of the facility associated with security and the applicant's procedures for assuring appropriate implementation of those features.

b. Observations and Findings

CFC included in the design specific features to provide for effective access control. Access to the irradiator enclosure is restricted and the facility is equipped with intrusion alarms. Inspectors reviewed the applicant's proposed security systems and access control procedures. The inspectors determined that representatives of the Pennsylvania State Police have visited the facility and discussed their capabilities for response, if needed.

c. Conclusions

The facility includes appropriate design features for a security program. The applicant's procedures are adequate to assure that only authorized individuals are allowed access to the irradiator and to detect attempted unauthorized access.

## VII. Engineering and Design Evaluation

a. Inspection Scope

The inspectors evaluated the design, engineering practices, and material used in the fabrication of various components, and integrity and capacity of the assembled components to perform their respective tasks. This included a review of adequacy of the pool integrity, overhead crane-hoist supporting track and the hoist as-designed and as-built capability to handle working loads, plans for in-service maintenance and testing, and an evaluation of the response of the facility to load drops either from equipment

failure or a seismic event although the probability and the expected magnitude of a seismic event are low.

b. Observations and Findings

The inspectors reviewed the design parameters and adequacy of various equipment for service and held discussions with CHL engineers regarding the design.

Hoist Design and Heavy Load Handling

The inspectors discussed and reviewed: the design load limit for various components including the attachment lifting lugs; the cable and cable connector strength and test results; cable strength specification versus the load requirements, the hoist motor horsepower versus the load limitation for motor stalling before exceeding the load limit, safety considerations and control system response in case of a power failure during load lifting/moving sequence; and hoist and supporting structure susceptibility to a credible seismic event (earthquake). The inspectors discussed with CHL engineers the design of the overhead crane-hoist supporting track and the hoist as-designed and as-built capability to handle the working loads of placing loaded containers into and out of the pool. The inspectors also reviewed calculations related to the strength of various components of the system and their ability to withstand static and dynamic stresses during normal operation and those caused by a failure of the support cables.

The inspectors noted that the hoist cable test assembly, with lifting fittings part numbers 651 and 653, the two types used for lifting the bell assembly, was tested to failure and demonstrated a tensile strength of 24,410 pounds (lbs). This was over 3.2 times the maximum weight of the loaded bell, which is approximately 7,500 lbs. Because there are two lifting cables per bell, the hoist cables provide an overall safety factor on lifting of 6.5.

Load Drop

While a load drop is unlikely, the significance of such a drop was evaluated by the inspectors. The inspectors reviewed the features which assure pool integrity and the possible damage to the pool structure or the plenum and sources in the event that a loaded bell falls on the structure. This included discussions with CHL engineers and a review of drawings and calculations performed by CHL. Based on their review and discussions with the CHL engineers, the inspectors concluded that, due to the geometry of the product containers (or bells) and the pool, including the locking bar, the following scenarios involving a dropped bell needed to be examined further:

(1) a dropped bell which strikes the edge of the pool directly or at an angle (as a result of a single cable failure);

(2) a dropped bell directly over the pool which enters the pool perfectly upright within the constraints of the stainless steel guide rails;

(3) a dropped bell that strikes the locking bar;

(4) a dropped bell that falls away from the pool.

The inspectors' assessment of the impacts of a falling bell under these scenarios is as follows:

Scenario (1): The structural strength of the pool edges and its capability to resist impact is quite high since the upper pool edge is capped with ¼ inch thick stainless steel over a structure of ¼ inch thick stainless steel inner wall, 6 inches of 4,000 pounds per square inch (psi) strength concrete reinforced by twin steel I-beams on each side of the pool, and an outer carbon steel wall. Because of this robust structure, dropping a bell even from the maximum height of the hoist onto the pool edge is expected to result in only minor surface denting and/or scratching. The inspectors concluded that, under this scenario, damage to the pool liner resulting in loss of shielding and damage to the sources was not credible.

Scenario (2): The inspectors determined that, in the event of a potential crane failure or load drop directly over the pool, the bell would either fall straight into the pool following the guide rack or strike at an angle and not fully enter the pool. Because the clearances between the bell and the sides of the pool are very small - approximately ½ inch - the bell is much more likely to become stuck than to enter the pool unimpeded. However, if the bell were to enter the pool in free fall, its velocity would be impeded by the hydraulic dampening of the pool water flow reduction. The bell is not likely to have an adverse effect on the plenum because of this reduction in velocity, the stainless steel guide rails that are designed to prevent the bell hitting any part of the plenum or the pool liner, and the inherent strength of the plenum. In the event that the bell strikes the edge of the pool at an angle, only minor surface dents or surfaces is expected as noted in Scenario 1 above . In either case - a falling bell that becomes stuck in the pool opening or one that enters the pool itself - damage to the pool liner resulting in loss of shielding or to the sources in the plenum are not considered credible.

Scenario (3): Under the scenario, a dropped bell would impact on the locking bar that sits on top of the pool. The bar is made of 1/4 inch thick stainless steel plate formed to a 5 inch wide channel shape with 3.5 inch high edges spanning a pool inner width of 68 inches. Downward deformation of the lock bar approximately ½ inch would result in contact with other structural members in the pool effectively reducing the span distance to 58 inches. The lock bar is bolted to the pool edges at both ends by ⅝ inch diameter F593C-TME bolts and is boxed in at both ends by bolted stainless steel components that also provides support to bell guides. The span of the lock bar between the boxed in areas is 50.5 inches. This results in the lock bar being fixed and strengthened at both ends such that it is much stronger than a simple 5x3.5 inch channel.

Only considering the vertical sides (2x3.5 inch) and 1 inch of the horizontal section of the lock bar, there is ( 8" length x 1/4" thickness) 2 square inches of loadable cross-section of stainless steel in the lock bar. Stainless steel has a strength of 75,000 psi minimum. Using a safety factor of 4, two square inches would support a load of 37,000 lbs in tension or 18,750 lbs in shear. This compares favorably to the total weight of a load bell and its maximum load which is approximately 7,500 lbs or a loading of approximately 3750 lbs with one cable remaining functional.

CHL drawing No. 33248-205-242-001, Rev 1, shown in Figure 3, presents a calculation of the strength of the lock bar showing vertical strengths of the lock bar to be 5231 lbs at its center line and 11664 lbs at 8.75 inches inside the inner pool edge. The vertical strength of the lock bar at its center line (5231 lbs) is less than the maximum weight (7,500 lbs) of a loaded bell. However, this is not of safety concern because if only one cable fails, the bell will swing and one of its lower edges will strike the lock bar at a point away from the center line. On the other hand, if both cables fail, the weight of the bell will be at the ends of the lock bar because the bell is open at the bottom. Furthermore, the lock bar also has extra support at each end that effectively reduces the "free" length of the bar to approximately 58 inches, which is less than the length of the bell (approximately 66 inches). Therefore the weight of a fallen bell will be on the sections of the lock bar that have additional support. Accordingly, the inspectors concluded that, under this scenario, damage to the pool liner resulting in loss of shielding or damage to the sources was not credible.

Scenario (4): The inspectors concluded that if the bell were to fall away from the pool, striking the concrete floor or any ancillary equipment, the result would not be a loss of shielding or damage to the sources.

Seismic Event

10 CFR 36 applies certain design considerations for shielding walls at panoramic irradiators located in seismic areas. Although these considerations do not apply to underwater irradiators such as the one constructed by CFC, the staff evaluated seismic hazards for the CFC facility.

The staff consulted the U.S. Geological Survey (USGS) National Earthquake Information Center web site as well as the Limerick Generating Station Final Safety Analysis Report. Those sources indicated that the Quakertown area is physically located between the Piedmont Lowland section of the Piedmont physiographic province and the Reading Prong section of the New England physiographic province. A review of historic seismic events within 200 miles of the Quakertown area indicates that the highest intensity event recorded was a level VII on the Modified Mercalli Intensity Scale (MMIS). The USGS describes the effect of such an event as "Damage negligible in buildings of good design; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken." USGS data indicate that over a 50 year period in the Quakertown area, there is a 2% occurrence probability of a seismic

event with peak ground acceleration (PGA) of 0.16g (0.16 times the acceleration of gravity). Given that the projected operational life of the irradiator is less than 50 years, the likelihood of an event of this magnitude is considered low.

The staff's observations during visits to the facility, review of the design drawings, and conversations with the design engineers led to the conclusion that the final pool structure is a robust one. Accordingly, a seismic event that reaches the intensity described above is likely to result in negligible or no damage to the pool. Damage could occur to the support structure for the product delivery system as a result of ground acceleration, but the pool and the sources within the pool are expected to be unaffected. Based on review of the design and observation of the placement of the pool, seismic activity of the intensity typical of the region is not expected to adversely affect the sources in the pool.

If a seismic event were to occur while the bell was in the pool, the bell's lateral motion would be limited by the ½ inch clearance to the guide rails. The motion is not expected to have a significant effect on the pool structure. A seismic event while the bell is outside of the pool guide rails would result in the bell being fixed in space by inertia while the earth, building and crane move in the seismic wave. This would stress the hoist cables in the same way as an impact load; however, with a demonstrated safety factor of three on each of the two redundant cables, failure of either is not credible at the expected maximum seismic loading. This extra lifting safety factor discussed above is useful in evaluating the significance of a seismic event even in the more severe condition of having one lift cable severed. As noted above, the peak ground acceleration in the Quakertown area is projected to be 0.16g. This represents a maximum loading that is a small fraction of the loaded bell weight. In comparison to a seismic event magnitude of 0.16 g, the stress on the one remaining cable after severing of the other represents a bounding or maximum loading condition. In this case, the bell would be supported by the remaining cable with a safety factor of over 3, which is an acceptable condition. If a seismic event occurred while the bell was above the pool and caused a hoist or the load support failure, the dropping bell would have the same effect as discussed in the scenarios above.

c. Conclusions

The irradiator installation appears to be adequately designed and constructed. The system performed properly during operational demonstrations and procedures appear to be adequate to assure safe operation.

The motor hoist, cables and associated frame are adequate for carrying the intended loads. The system is designed against a motor driven component failure by having the motor stall horsepower below the torque level required to fail any component in the lifting train. Based on review of all the available information, a load drop is considered an unlikely event. In the event of a load drop under the four scenarios described above, the damage to the pool liner or irradiator assemblies are not credible results and damage to the pool's upper structure will be limited to minor dents or scratches on the top surfaces.

A crane failure or load drop anywhere in the building except directly over the pool would neither damage the sources nor lead to a loss of shielding.

These evaluations of the damage to the pool structure in case of a loaded bell falling on the structure, are in agreement with the applicant's evaluation described in its letter dated July 22, 2003 (ML032030333), in response to NRC's letter dated July 18, 2003 (ML032020137).

The pool structure and the plenum are also not expected to suffer any significant damage due to a seismic event of Level VII intensity on the modified Mercalli scale.

## VIII. Exit Meeting

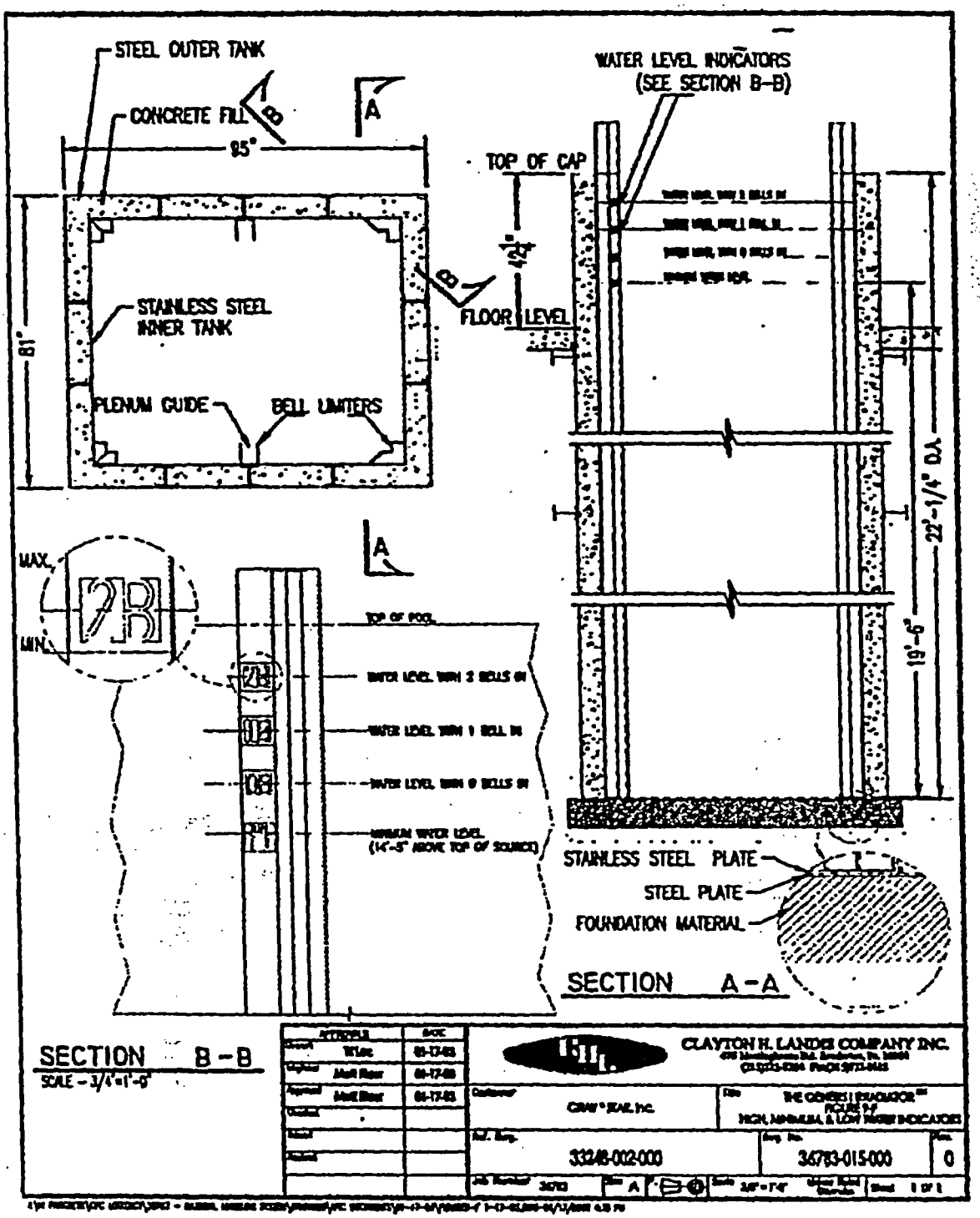
During each visit to the facility the inspector met with the applicant's management to discuss the various stages of construction of the irradiator. The inspector explained to the management NRC's procedure for review of a license application and its final disposition.

## PARTIAL LIST OF PERSONS CONTACTED

Applicant

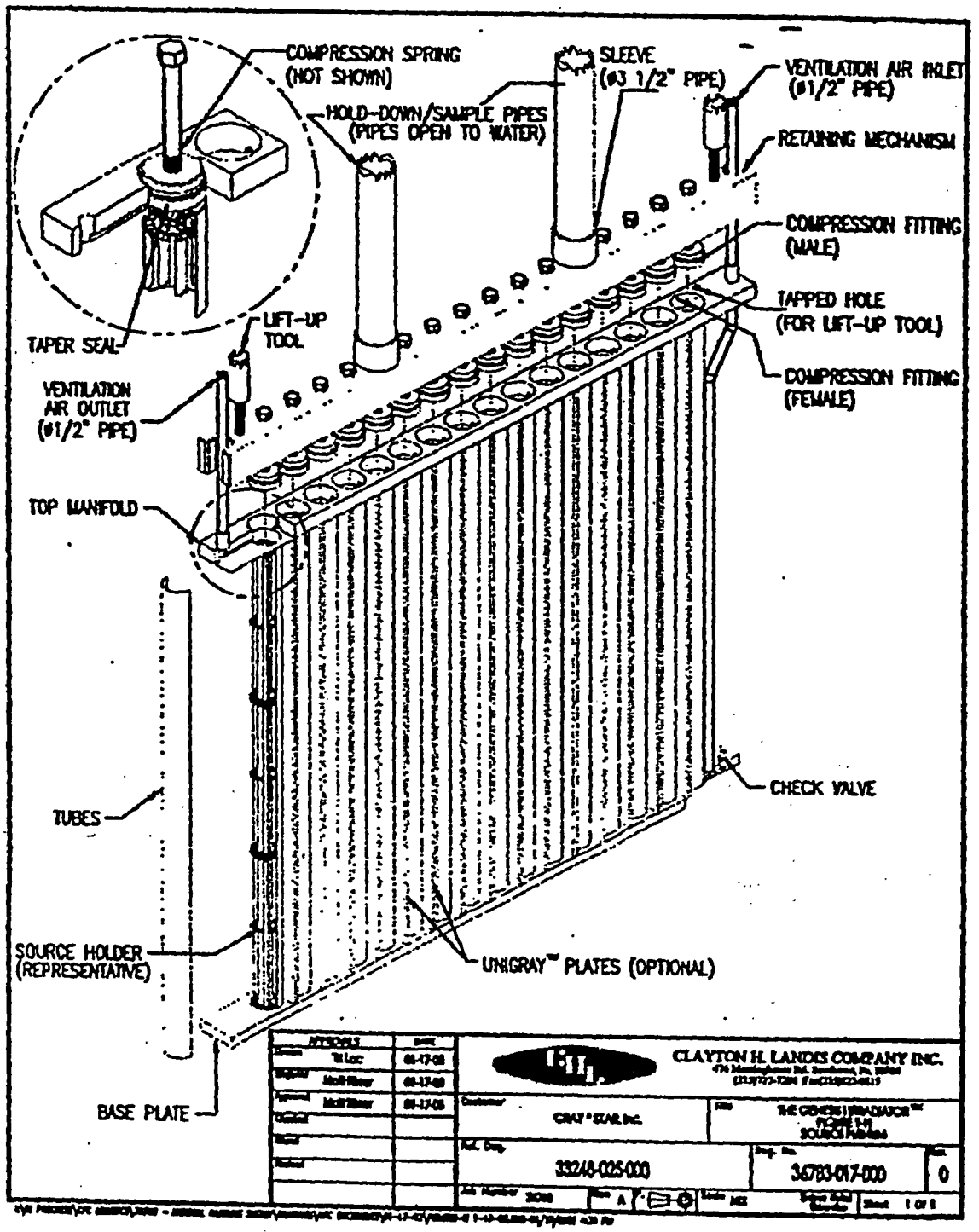
James Wood, President, CFC Logistics, Inc.
Marie Turner, Manager, Product Irradiations, CFC Logistics, Inc.
Thomas Clemens, Project Manager, CFC Logistics, Inc.
David Blattner, Irradiator Operator in Training, CFC Logistics, Inc.
Russell Stein, Vice President, Gray*Star, Inc.
Martin Stein, President/CEO, Gray*Star, Inc.
Rick Keiper, Project Manager, Clayton H. Landis Company, Inc.
Matthew Risser, Engineering Manager, Clayton H. Landis Company, Inc.
Kevin C. Landis, Engineer, Clayton H. Landis Company, Inc.
Andrew Landis, Engineer, Clayton H. Landis Company, Inc.
Joseph Paddock, Electrical Engineer, Clayton H. Landis Company, Inc.

FIGURE 1



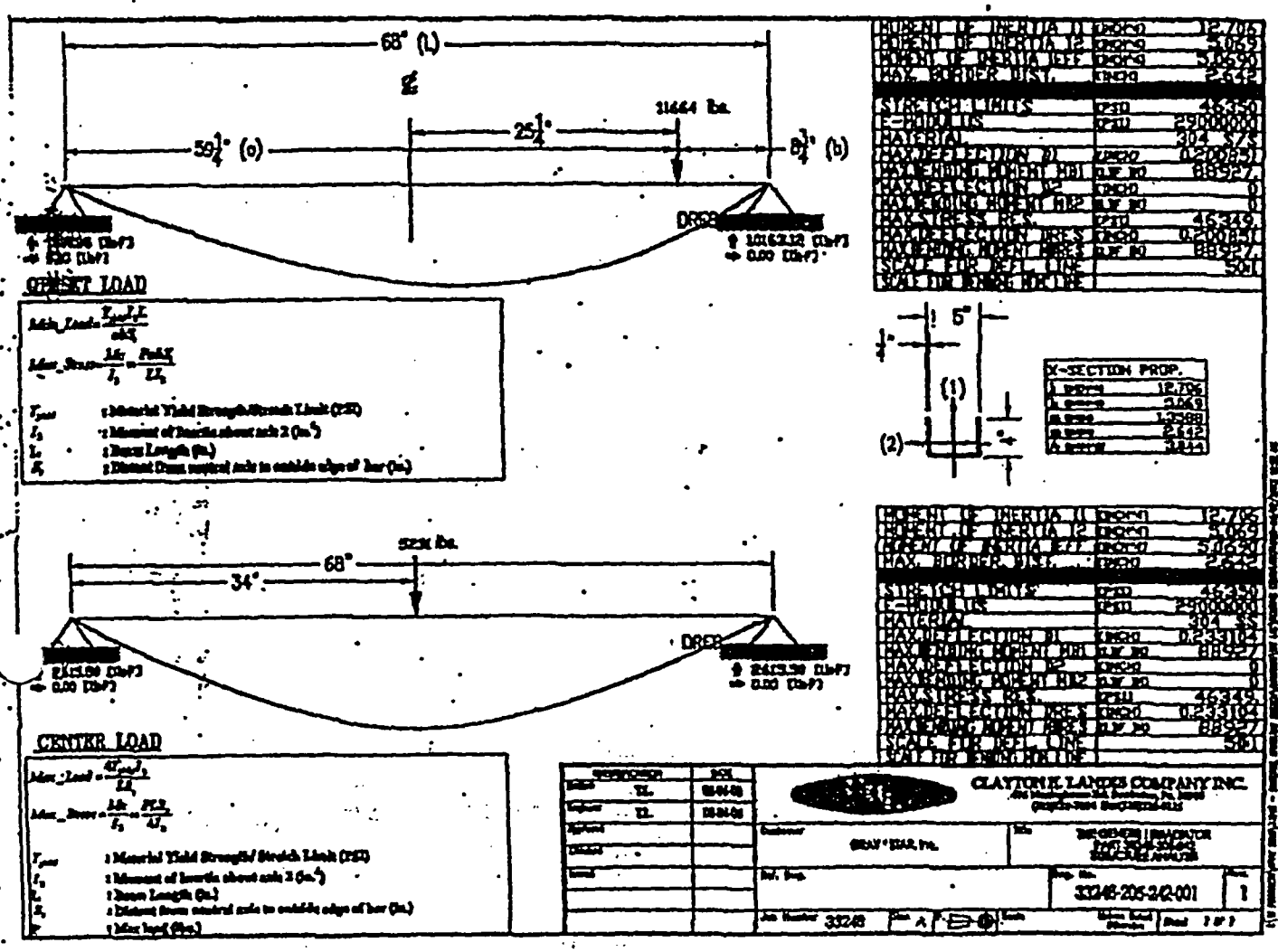

See also ML031610044

FIGURE 2




See also ML03160287

FIGURE 3




See also ML032250045

EXHIBIT C

LINDA LINGLE
GOVERNOR

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y MATSUI
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H SEKIGUCHI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
300 Rodgers Boulevard, #12
Honolulu, Hawaii 96819-1830

IN REPLY REFER TO

AIR-O
05.0042

May 10, 2005

Mr. Michael Kohn
EQUIPMENT TEAM HAWAII
P.O. Box 31264
Honolulu, Hawaii 96820

Dear Mr. Kohn:

This is in response to your fax dated May 4, 2005, asking whether lots #011109 and 011108 are in a tsunami flood evacuation zone.

The answer is no, despite the phone book evacuation guide, which is an overly conservative plan to minimize loss of life anywhere near a coastline.

The official flood delincation document is the Federal Emergency Management's Flood Insurance Rate Map, Panel 335, a copy of which is attached. Honolulu International Airport (HNL) is shown in Zone D, undetermined but flooding possible. Note that HNL is not in Zones V or VE, which relate to coastal hazards.

The eastern edge of lot 011108 is located at an elevation of 7:7' above Mean Sea Level (MSL) and 450' west of the edge of Keehi Lagoon. Lots 011108 and 011109 are located 2,250' from the southern shoreline of Mamala Bay. The Reef Runway at elevation +10' MSL is protecting all of South Ramp, HNL.

The south shore of Oahu has never sustained more than a 3' wave from any tsunami since 1837. Earthquakes since that time have occurred on Maui and in and around the Big Island of Hawaii but not on Oahu. thus we are in seismic Zone 2A while the Big Island is in Zone 4.

Tsunami and hurricane vulnerability studies have been done for Hawaii in 1977, 1985 and 1991 with another to be started soon. A hurricane from the southwest was the worst-case scenario which generated a significant storm surge at the entrance to Pearl harbor and flooding in Hickam AFB and the runway safety area of the Reef Runway. HNL would shift into a protective, non-operational status at the point where the winds exceeded 50 knots per hour.

Our Environmental Impact Statement of August 1991 concludes a section on Natural Hazards with the statement that "It is not likely that high waves, a tsunami or a hurricane would affect the project sites covered within this EIS." The project sites included South Ramp Development.

If you have any questions, please contact me at 836-6533.

Sincerely,

BENJAMIN R. SCHLAPAK
Manager
Oahu District Airports

Enclosure

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|---|---|---|
| In the Matter of | ) | |
| Pa'ina Hawaii, LLC | ) | Docket No. 030-36974 |
| | ) | |
| Materials License Application | ) | |
| | ) | |

NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney herewith enters an appearance in the captioned matter. In accordance with 10 C.F.R. § 2.314(b), the following information is provided:

| | |
|---|---|
| Name: | Fred Paul Benco |
| Address: | 1188 Bishop Street<br>Suite 3409<br>Honolulu, Hawaii 96813 |
| E-Mail: | fpbenco@yahoo.com |
| Telephone Number: | (808)523-5083 |
| Facsimile Number: | (808)523-5085 |
| Admissions: | State of Hawaii<br>State of Ohio<br>Ninth Circuit Court of Appeals |
| Name of Party: | Pa'ina Hawaii, LLC |

DATED: Honolulu, Hawaii October 26, 2005

Fred Paul Benco
Counsel for Pa'ina Hawaii LLC

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|---|---|---|
| In the Matter of | ) | |
| Pa'ina Hawaii, LLC | ) | Docket No. 030-36974 |
| | ) | |
| Materials License Application | ) | |
| | ) | |

CERTIFICATE OF SERVICE

I hereby certify that copies of "APPLICANT PA'INA HAWAII, LLC'S ANSWER TO REQUEST FOR HEARING BY CONCERNED CITIZENS OF HONOLULU" and "NOTICE OF APPEARANCE FOR FRED PAUL BENCO" in the captioned proceeding have been served as shown below by deposit in the United States mail, first class, this 26th day of October, 2005. Additional service has also been made this same day by electronic mail as shown below.

Administrative Judge
Thomas S. Moore, Chair
Atomic Safety and Licensing Board
Mail Stop: T-3-F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(e-mail:tsm2@nrc.gov)

Dr. Anthony J. Baratta
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(e-mail: AJB5@nrc.gov)

Office of Commission Appellate Adjudication
U.S. Nuclear Regulatory Commission
Mail Stop: O-16C1
Washington, DC 20555-0001

Administrative Judge
Dr. Paul B. Abramson
Atomic Safety and Licensing Board
Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(e-mail: pba@nrc.gov)

Office of the Secretary
U.S. Nuclear Regulatory Commission
Attn: Rulemakings and Adjudication Staff
Washington, DC 20555-
(e-mail: hearingdocket@nrc.gov)

Bradley W. Jones, Esq.
Office of the General Counsel
Mail Stop - O-15 D21
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
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Tel: (808-599-2436)
Facsimile Number: (808)521-6841

DATED: Honolulu, Hawaii Oct. 26, 2005

FRED PAUL BENCO
Attorney for Applicant
Pa'ina Hawaii, LLC

**THE LAW OFFICES OF FRED PAUL BENCO**
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TEL: (808) 523-5083 FAX: (808) 523-5085
e-mail: fpbenco@yahoo.com

October 26, 2005

Office of the Secretary
U.S. Nuclear Regulatory Commission
ATTN: Rulemakings and Adjudication Staff
Washington, DC 20555-0001

Re: Docket No. 030-36974: "Applicant Pa'ina Hawaii, LLC's Answer To Request For Hearing By Concerned Citizens Of Honolulu"

Dear Secretary:

I represent the legal interests of Pa'ina Hawaii, LLC, which has applied for a Materials License.

Pursuant to your regulations, please find enclosed an original and two (2) copies of "Applicant Pa'ina Hawaii, LLC's Answer To Request For Hearing By Concerned Citizens of Honolulu" ("Answer").

A copy of this letter and a copy of the Answer is being served upon all parties reflected in the Certificate of Service attached to the Answer.

If you have any questions or comments, please feel free to contact my office. Tel: 808-523-5083; Fax: 808-523-5085; e-mail: fpbenco@yahoo.com. Thank you.

Very respectfully yours,

Fred Paul Benco

Encls.
cc: All parties on Certificate of Service