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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

IN THE MATTER OF)

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US ECOLOGY, INC. (Sheffield,
Illinois Low-Level Radioactive
Waste Disposal Site)

) Docket No. 27-39 SC
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MOTION BY THE PEOPLE OF THE STATE OF ILLINOIS
FOR SUMMARY DISPOSITION

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The People of the State of Illinois
Request Oral Argument On This Motion

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FOR SUMMARY DISPOSITION

Intervenor, the PEOPLE OF THE STATE OF ILLINOIS, by NEIL F. HARTIGAN, Attorney General of the State of Illinois, moves the Atomic Safety and Licensing Board (hereinafter "ASLB" or "Board") for an order finding, pursuant to the Atomic Energy Act of 1954, 42 U.S.C. §2011 et seq. (as amended) that: (1) Licensee US Ecology (hereinafter "USEC") is in "possession" of the radioactive material buried at the radioactive waste facility located in Bureau County, Illinois pursuant to License No. 13-10042-1 issued by the Nuclear Regulatory Commission (hereinafter "Commission" or "NRC"),¹ and (2) USEC cannot unilaterally terminate NRC License No. 13-10042-1, as termination of the license requires affirmative action by the NRC. In support whereof, the People of the State of Illinois states as follows:

I.

BACKGROUND

This case concerns the status and disposition of the radioactive waste buried at the low-level radioactive waste facility near Sheffield, Bureau County, Illinois (hereafter the

"Sheffield Site"), and the disposition of License No. 13-10042-1 pursuant to which the waste was buried at the Sheffield Site.

The Sheffield Site was established and operated as part of the program pioneered under the aegis of the AEC, for commercial burial of radioactive waste in shallow land facilities. The February 3, 1959, Statement of H.L. Price, Director of the Division of Licensing and Regulation of the AEC, made during Congressional Hearings on Industrial Radioactive Waste Disposal, indicate that in 1959 the AEC was considering the possibility of licensing commercial interests to operate land burial facilities to handle the growing radioactive waste stream resulting from the rapid expansion of the use of nuclear energy in the northeastern United States.² The Statement further indicates that the danger presented to the public health and safety arising from the hazardous nature of radioactive waste and the lengthy time period over which the waste would remain hazardous, was of primary concern to the AEC and presented a primary obstacle to the initiation of the commercial burial program:

Because of the high level of activity, and half-life of the radioactive wastes, it may be necessary to maintain land burial areas for an extended period of time, perhaps hundreds of years. The feasibility of a commercially operated burial ground under AEC license is largely dependent upon resolution of this problem.³

The AEC deemed commercial entities incapable of ensuring public health and safety through the "long term" maintenance of the burial sites.⁴ Instead, it was determined that only governmental bodies, either Federal or State, had the stability

and continuity to undertake the long term oversight of the burial sites. Thus long term oversight of the sites would be placed with governmental bodies, either Federal or State.⁵ With this decided, the way was open for the AEC to initiate and administer a program under which commercial interests could become licensed to engage in the land burial of radioactive wastes and take responsibility for the "short term" protection of the public health and safety pursuant to AEC license and regulatory requirements.

In the early stages of the program, USEC's predecessor, California Nuclear, Inc., (hereinafter "CNI") applied for a permit to engage in the business of transporting radioactive wastes to authorized land burial sites. On July 15, 1964, the AEC issued License No. 13-10042-1 to CNI for this purpose.⁶ On October 26, 1964, the License was amended by the AEC in response to CNI's request, to allow the Licensee to further participate in operations involving land burial of radioactive waste.

On August 16, 1966, CNI sought an amendment to the License to allow for burial of radioactive waste in the soil of a facility near Sheffield, Illinois. While examining the proposed operation and reviewing the terms of the proposed program, the AEC issued on December 2, 1966 an amendment to the License in response to CNI's request, allowing among other things, the Licensee:

to receive, possess, process, repackage, and store waste by products, source and special nuclear materials at a facility located in Bureau County Illinois.⁷

This amendment, allowing the establishment and operation of what became the Sheffield Site, was subject to specific conditions set forth in the license, and was:

deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to the provisions of 10 CFR 20, 'Standards for Protection Against Radiation', all other applicable rules, regulations, orders of the Atomic Energy Commission now or hereafter in effect...⁸

Thus, the terms of the License No. 13-10042-1, allowing the development of the Sheffield Site, contemplated the ongoing development of responsibilities for the Licensee conducting activities at the Site.⁹

In the interim, while the AEC reviewed the application for an amendment to the License to allow a land burial operation at the Sheffield Site, CNI, on October 3, 1966, entered into a ninety-nine (99) year lease with the State of Illinois, which owned the property at the Site, with the express purpose of operating a land burial facility for radioactive waste at the Site¹⁰. The Lease, by its terms, required the Lessee to remain on the Site for the ninety-nine year period, and expressly required the Lessee to:

comply with all requirements of the Atomic Energy Commission and applicable Illinois laws and rules as the same are promulgated and amended from time to time.¹¹

As part of its review of the application for License amendment, the AEC reviewed the Lease as one of the fundamental

documents for assuring proper protection of the public health and safety if the License were amended to allow land burial at the Sheffield Site.¹²

Only after review of the Lease and the terms set forth therein, under which the Lessee agreed to be present on the Site for ninety-nine years, and to be subject to AEC requirements and Illinois laws and rules "as the same are promulgated and amended from time to time", did the AEC issue a License amendment allowing the Lessee/Licensee to operate a land burial facility at the Sheffield Site for radioactive wastes.¹³ The License explicitly required the Licensee to maintain the burial trenches used in burying the radioactive wastes at the Site.¹⁴

On March 25, 1968, License No. 13-10042-1 was transferred from CNI to Nuclear Engineering Company, Inc. (hereafter "NECO"), which has since changed its name to US Ecology. In August 1968, NECO filed an application with the AEC to renew the license, seeking to expand the site from 20.45 acres to 188.45 acres. A licensing board was not established to consider this application until March 1978. In the interim, a further amendment to License No. 13-10042-1 was issued by the NRC on January 6, 1977, superseding all previous conditions in the License with regard to the Sheffield Site.¹⁵ The amendment set forth limits on the Licensee's possession of specified radioactive materials, and authorized burial of special nuclear material only in specified trenches on the Site. The amendment specified no expiration date for the License with regard to the Sheffield Site.

In December, 1978, NECO moved the Board which had been established to consider the application to expand the Site, to suspend the proceeding. The Board issued an order on March 7, 1979, scheduling oral argument on the motion.

On March 8, 1978, NECO filed a document with the Board entitled "Notice...of Withdrawal of Application and Termination of License for Activities at Sheffield." NECO provided a statement to the NRC Director, Nuclear Materials Safety and Safeguards, claiming that as of March 8, 1978, NECO had withdrawn its license renewal application seeking expansion of the site, and asserting that it had unilaterally terminated License No. 13-10042-2 for all activities at the Site. NECO similarly sent a message to the State of Illinois claiming that the Lease was unilaterally terminated, along with the NRC License.

On March 9, 1978, the NRC Director, Nuclear Materials Safety and Safeguards, denied NECO's authority to unilaterally terminate the License, and directed NECO to take all actions necessary with regard to the Site to protect the public health and safety. NECO denied the Director's authority to issue an Order to Show Cause which NECO appealed to the NRC. On June 6, 1979, the NRC issued a ruling sustaining the show cause order, and a Notice of Hearing directing the ASLB to consider NECO's authority to unilaterally terminate the license.

Following issuance of the NRC Order and Notice of Hearing, there have been no further radioactive waste burial activities at the Sheffield Site. USEC, NECO's successor in interest,

has remained on the Site acting as NRC Licensee while litigating this proceeding.

During the pendency of this proceeding, substantial studies of the Site have been undertaken by or on behalf of the parties to the litigation, in order to achieve proper understanding of the Site and to fashion an appropriate technical remedy to identified Site problems. In addition, serious efforts have been made to negotiate a settlement of the litigation, as reported to the Board in four joint reports on the status of settlement negotiations, filed by the NRC Staff, USEC and the People of the State of Illinois. These efforts continue.

On August 22, 1986, following a pre-hearing conference on August 19, 1986, this Board issued a Memorandum and Order directing the parties to continue settlement negotiations while at the same time preparing to litigate the proceeding. The Memorandum and Order propounded a briefing schedule for the parties to address two issues for resolution by summary disposition. Those issues are as follows:

1. Whether the Applicant "possesses" the source, by-product, or special nuclear material at the Sheffield Site.
2. Whether US Ecology can unilaterally terminate License No. 13-10042-1 for activities at Sheffield without affirmative action by the Commission.¹⁶

This Motion for Summary Judgment of the People of the State of Illinois is addressed to these two issues.

II.

ARGUMENT

A primary and essential point to be recognized in this proceeding in resolving the two issues raised for summary disposition by the Board is that the activity with which the proceeding is concerned, (i.e., the operation and maintenance of a shallow land burial facility for radioactive waste), and the License pursuant to which the activity was carried forth by the Licensee, is a dangerous activity, the effects of which present a serious and ongoing threat to the public health and safety. The NRC is charged under the Atomic Energy Act of 1954, as amended, (hereafter "AEA") with the authority and responsibility of regulating and licensing this activity to ensure that it is carried forth consistent with the public health and safety. License No. 13-10042-1 was issued pursuant to this authority and responsibility, and the actions of the Licensee at the Sheffield Site were carried forth pursuant to the regulatory system instituted to ensure that the activity did not conflict with the public health and safety.

It is in this light that the responsibilities imposed upon the Licensee by License No. 13-10042-1 must be understood. This understanding, applied to the issues present here for summary disposition, requires the Board to find: (1) USEC as licensee "possesses" the source, by-product, and special nuclear material at the Sheffield Site, and (2) USEC cannot unilaterally terminate License No. 13-10042-1 without affirmative action by the NRC.

The public health and safety, which is the basic concern of the AEA, and thus the fundamental principle and standard governing the NRC, this Board, and the License at issue in this case, requires these findings. The position advocated by USEC to the contrary is at odds with the very principle underlying the AEA, the purpose of the NRC and the basis of the License which USEC, as Licensee, has exploited. USEC is, in short, arguing that the NRC does not have the power to enforce the AEA, which the NRC is statutorily charged to enforce. As such, USEC's must be rejected. [See SEC v. Chenery, 332 U.S. 194, 204 (1946)]. The Motion of the People of the State of Illinois For Summary Disposition of the issues raised by this Board must, pursuant to the principle and terms of the AEA and License No. 13-10042-1, be granted.

A. USEC IS IN "POSSESSION" OF THE SOURCE, BY-PRODUCT, AND SPECIAL NUCLEAR MATERIALS AT THE SHEFFIELD SITE.

1. The Low-Level Waste Now Buried at the Sheffield Site Requires an NRC License In Order to be Legally Possessed.

The source, by-product and special nuclear material, such as is buried at the Sheffield Site, cannot be "possessed," transferred or received without an NRC license authorizing "possession", transfer or reception¹⁷ The fundamental reason for the license requirement is the hazardous nature of the material and the threat it poses to the public health and safety. To control this threat and protect the public health and safety, Congress vested the NRC with authority and responsibility for administering the AEA. Through the license program, the NRC administers the terms of the AEA, and enforces the standard and

principle of protecting the public health and safety in regard to radioactive material. It does this by controlling the paths through which the material can pass. Who can possess the material, and under what circumstances, is determined by the NRC license program. Thus, in order to legally transfer, receive or possess the source, by product and special nuclear material, such as is buried at the Sheffield Site, an NRC license is required.

2. USEC is the Only Entity Licensed to Receive or Possess Low Level Material at Sheffield

USEC, the successor in interest to CNI and NECO, is the only entity licensed by the NRC to receive or possess source, byproducts or special nuclear material at the Sheffield Site. No other entity, including the State of Illinois, is licensed to receive or possess such material at the Site. Further, USEC has exploited this status as Licensee and, pursuant to the License and the Lease with the State of Illinois, took possession of the radioactive waste buried at the Site. Indeed, it is an understanding of the State of Illinois and USEC that, under the Lease, USEC secured title to the materials accepted for burial at the Sheffield Site.¹⁸

Thus, USEC has unquestionably taken possession of the material now buried at the Sheffield Site. To successfully argue that it is no longer in "possession" of this material, USEC must demonstrate that it has somehow shed itself of this possessory interest in the waste. USEC has attempted to do this in its Motion For Summary Disposition before this Board, dated October 14, 1986, by arguing that either (1) it transferred possession of the

material to the State of Illinois,¹⁹ or (2) by burial the radioactive material has been "finally disposed" and, therefore, rendered non-possessable.²⁰ Neither of these two claims is supportable, and must be rejected for the conclusion that USEC is in "possession" of the radioactive material buried at the Sheffield Site.

3. USEC Has Not Transferred Possession Of the Material to Illinois.

Under the terms of the Lease between USEC and Illinois, USEC took possession of all radioactive waste brought to the Sheffield Site. Indeed, nowhere does USEC dispute that it took possession of this material. License No. 13-10042-1 authorized USEC to "possess" this material, and, thus, such possession was legal and proper under applicable Federal and State laws.²¹ In order for USEC to legally transfer this possession, and thereby rid itself of its possessory interest in the material, an entity similarly licensed to receive the material would have to accept it from USEC. In its Motion for Summary Disposition, USEC argues that it somehow transferred possession of the radioactive material to the State of Illinois. Illinois, however, was not and is not presently licensed to receive possession of such material. Thus, it is legally impossible for Illinois to take possession, or for USEC to transfer possession of the radioactive material to Illinois.²² If Illinois cannot legally receive the material, it cannot be said to possess it. Thus, USEC's argument that a transfer was made to Illinois runs counter to the requirements of the AEA, and "possession" did not pass from USEC to the State.

In addition to the legal impediment to transfer presented by the fact that Illinois was and is not licensed to receive possession of the material, possessory interest in the material could not pass to Illinois absent acceptance of the material by the State. Such acceptance has not yet been undertaken by the State. Thus, no transfer has been made. USEC attempts to argue that, by virtue of agreeing to undertake long-term responsibility for the Sheffield Site as a sovereign government, Illinois has in fact already taken "possession" of the radioactive waste at the Site. This argument attempts to obscure a fundamental point: Illinois only agreed that "ultimate" responsibility for the Site should repose in a sovereign government, and that the State would take on this role.²³ However, it did not thereby "accept" the waste. Indeed, the Illinois Radioactive Waste Act, which USEC relies on for its argument, reserves to the Illinois Department of Nuclear Safety the power and authority to effect acceptance of radioactive waste material for permanent storage in the State at some future date:

the rights, title and interest in, of and to any radioactive waste materials accepted by the Department of Nuclear Safety for permanent storage at such facilities, shall upon acceptance become the property of the State...²⁴

The Radioactive Wastes Act, by its terms, does not automatically accept possession in the State of all radioactive wastes currently and in the future brought into the State for permanent storage. Instead, it allows the Illinois Department of Nuclear Safety to exercise administrative judgment to accept title to the

wastes, by an affirmative decision, when such acceptance is deemed appropriate, and is, most importantly, legal.

USEC's reading of the Statute as affecting automatic acceptance of title to the wastes by the State, is absurd and at odds with the plain meaning of the Act. It is also at odds with the legal requirements of the Federal regulations governing the situation. Until Illinois becomes a licensee, or the NRC acts to otherwise exempt Illinois from the license requirements, the State cannot legally accept possession of the radioactive waste at the Sheffield Site.

As the foregoing demonstrates, USEC has not effectively transferred possession of the radioactive material from itself to Illinois. USEC clearly lacked the authority to transfer the material to Illinois just as the State of Illinois lacked the authority to accept such an illegal and unlicensed transfer.

4. USEC Has Not Rid Itself Of Possession By Merely Burying the Radioactive Waste.

The only alternative method to that of "transfer of possession" suggested by USEC to support its claim that it is not in possession of the radioactive material buried at the Sheffield Site is the notion that, once the material is buried in a shallow landfill, it no longer is "possessible."²⁵ The notion that shallow land burial of radioactive waste renders that waste "non-possessible" does not withstand an examination focused on the fundamental principle of the AEA: that the regulatory framework is in place to protect the public health and safety from the serious risks posed by radioactive material.

Radioactive waste is subject to regulation and NRC licensing requirements because it is hazardous and a threat to the public health and safety. Its threatening nature is well recognized, as is the fact that it remains hazardous and threatening when placed in a shallow land burial facility. Indeed, it is the serious long-term threat emanating from radioactive waste placed in land burial facilities that caused the AEC to delay initiating commercial handling of low-level waste sites until an adequate program could be developed capable of ensuring that stable long-term oversight of the threat would be in place.²⁶ The AEA itself was amended to provide for long-term oversight of land burial facilities, giving statutory recognition that, as a matter of law, radioactive waste remains hazardous after land burial.

It is because of the hazardous nature of land buried radioactive waste that the NRC requires operators of low-level radioactive waste facilities to have a license to operate their facilities, so that control of the threat can be provided for. That hazardous nature is not neutralized by land burial such as has occurred at the Sheffield Site. USEC's attempt to distinguish the essential possessory potential of buried radioactive waste from that of waste above ground logically fails. Such burial does not change the central nature of the material, as USEC argues. Moreover, USEC's position is contrary to the AEA and its fundamental goal of protecting the public health and safety. So long as that risk adheres in the material, it is essential that the material be subject to consistent treatment so

the public is not endangered. USEC's argument that the shallow land burial of the material, which does not neutralize the risk of the material, should change the legal status of the material and render it "non-possessory" is incoherent with the statutory requirements of the AEA. USEC cannot rid itself of possession of this hazardous material by means of a shallow land burial operation which leaves the essential hazard of the material unchanged. Mere burial of the material has not rid USEC of its possession of the material and, therefore, responsibilities for its proper care and final disposal.

B. US ECOLOGY CANNOT UNILATERALLY TERMINATE LICENSE NO. 13-10042-1 FOR ACTIVITIES AT SHEFFIELD WITHOUT AFFIRMATIVE ACTION BY THE COMMISSION

The notion that USEC can unilaterally terminate License No. 13-10042-1 is at direct odds with the nature and terms of the License itself and the Lease Agreement between the State and USEC which formed part of the basis of the Commission's decision to issue the License to begin with. Termination of the License requires affirmative action by the Commission. Such action has not been undertaken. License No. 13-10042-1 is, therefore, still in effect and binding upon USEC. The rules and regulations of the NRC presently in effect are, then, binding upon USEC and set forth the terms with which USEC, as Licensee, must comply and the conditions upon which termination of License No. 13-10042-1 may occur.

1. The License, By Its Nature and Terms, May Not Be Unilaterally Terminated By Licensee

The activity of conducting a radioactive waste burial facility is an inherently dangerous activity, due to the hazardous nature of the radioactive material involved. The AEA and the regulations pursuant thereto address this danger by requiring that the transfer, receipt, possession and burial of the radioactive waste be licensed. The authorizing licenses are restricted to persons and entities who demonstrate the ability and binding intention of undertaking the licensed activity in a manner consistent with the public health and safety. License No. 13-10042-1 was issued and amended upon the explicit finding that the licensee was qualified to act in a manner "to protect health and minimize danger to life or property", and consistent with the "health and safety of the public."²⁷

The license, then, is subject to the overarching and fundamental principle that the licensee is able and bound to act consistently with the public health and safety in connection with the licensed activity. The licensee cannot simply opt out of this regimen at will; the act of becoming a licensee entails surrendering of any pretention to unilateral power with regard to the licensed activity. The license is not simply a one-sided permit. It is a legal document which, upon issuance, forms a legally binding multilateral relationship involving, at bare minimum, the licensing authority, the licensee and the public. In accepting the license, and exploiting it by engaging in the dangerous licensed activity, USEC entered into such a binding

relationship which cannot be terminated simply by unilateral action. The very nature of the legal relationship created by the license precludes such unilateral action.

Action No. 13-10042-1, in authorizing activity at the Sheffield Site, imposed upon the Licensee responsibilities for maintenance and surveillance of the Site.²⁸ Thus, USEC's responsibilities at the Site are not fulfilled merely by burial of the waste. Radioactive waste, once buried, does not cease to be hazardous. The licensee's duties regarding the burial facility are not fulfilled merely by burial of the radioactive material at the Site. The duties extend to Site surveillance and maintenance to protect against the hazards inherent in the buried material. The Licensee cannot, by the terms of the License, unilaterally terminate these responsibilities to protect the public health and safety from the risks posed by the Licensee's own actions.

NRC practice in regard to the responsibilities of licensees and former licensees, has consistently viewed the duties required of the licensee as including maintenance and decontamination activities to ensure public safety. This is demonstrated by the following. In 1976, the United States General Accounting Office (hereafter "GAO") and the NRC initiated a review of over 20,000 formerly licensed and obsolete nuclear facilities to determine whether further action was required at the sites from the licensees to decontaminate them and thereby protect the public health and safety. Monte Canfield, Director

of the GAO, wrote to Marcus Rowden, Chairman of the NRC on September 17, 1976, stating:

We believe that the Federal Government must be able to assure the public that no residual contamination problems exist at sites which were operated under a Federal contract or a Federal license.²⁹

The NRC responded to this letter on October 15, 1976 stating:

It is the current NRC practice, and it was the practice of the AEC regulatory staff previously, to evaluate each licensed activity at the time of license expiration or termination to determine whether decontamination of facilities and equipment by the licensee and close out inspection by the regulatory staff was necessary.³⁰

The NRC then went on to say:

[W]e plan to reexamine our files of licenses terminated prior to 1965, of which there are a considerable number, over the next several months to determine if there are any cases where a significant public health and safety problem might exist at a former licensed activity. We will take appropriate action as necessary.³¹

An initial docket review of nearly 20,000 sites handling source, by-product and special nuclear material was undertaken. The NRC subsequently entered into a contract with the Oak Ridge National Laboratory (hereinafter "ORNL") for further review of an identified 8,775 terminated license dockets to determine the safety of the sites.³² Those former licensees whose formerly operated sites required further attention, were ordered by the NRC to return to the sites and perform further clean-up of the site for purposes of ensuring the public health and safety.³³

The foregoing clearly demonstrates that the NRC consistently viewed a license as requiring of the licensee ongoing responsibility for the health and safety effects of its operations under the license. Termination of those responsibilities requires affirmative action on the part of the NRC based on a determination that the licensee had properly fulfilled its site closure responsibilities. If, after termination of the license, it is discovered that the site requires further attention, the NRC can order the former licensee back to the site to remedy the problem. Thus, USEC's claim that it can unilaterally terminate its License is wholly at odds with historical NRC practice. Termination of license responsibilities requires NRC affirmative action, and this termination remains subject to reevaluation if evidence of incomplete decontamination is later discovered.

2. The Terms of the Lease Agreement Between USEC And the State Preclude Unilateral Termination of the License By USEC.

Pursuant to the Lease Agreement, USEC remains obligated to maintain the Sheffield Site in accordance with the requirements of the NRC and State law as they may be amended from time to time.

In support of its position that it no longer has any responsibility for the Sheffield site, USEC argues that its lease agreement with the State indicates that the State would assume sole responsibility for the Sheffield site in the event USEC abandoned the premises prior to the expiration of the lease. The interpretation of the lease proposed by USEC suggests that the State covenanted to assume full responsibility for maintenance of

the site in the event of USEC's breach, and without recourse against USEC. USEC's interpretation, however, finds no support in the written lease instrument, and indeed is contrary to the clear intention of the parties as it is expressed in the lease. By the express language of the lease, USEC has agreed to maintain the Sheffield site through the year 2065 in accordance with the requirements of the NRC and the State of Illinois and as they may be amended from time to time.

Under Illinois law, written leases are construed under the same rules applicable to the construction of a contract. Feeley v. Michigan Ave. Nat'l. Bank, 141 Ill. App. 3d 187, 490 N.E.2d 15 (1st Dist. 1986). As such, a court's primary objective in construing the lease is to determine and give effect to the intent of the parties. Midwest Bank and Trust Co. v. Scot Lad Foods, Inc., 140 Ill. App. 3d 166, 488 N.E.2d 676 (1st Dist. 1986). The intention of the parties must be gleaned, if possible, from the language of the lease, and the words should be given their plain and ordinary meaning. Wil-Shore Motor Sales, Inc. v. Continental Ill. Nat'l. Bank and Trust Co. of Chicago, 130 Ill. App. 3d 167, 474 N.E.2d 376 (1st Dist. 1984).

The clear and unambiguous terms of the lease agreement indicate that USEC, as successor in interest to CNI and NECO, contracted to operate the Sheffield site in accordance with NRC and State law requirements for a ninety-nine year period, and that it agreed to accept any subsequent amendments to those requirements. Article V of the lease provides in relevant part:

The Corporation covenants and agrees that it will use the leased premises in all respects in accordance with the 'Criteria For a Site in Illinois For the Concentration and Storage of Radioactive wastes . . . and also in accordance with the proposal of the Corporation of the State It is expressly understood that the Corporation shall comply with all requirements of the Atomic Energy Commission and applicable Illinois law and rules as the same are promulgated and amended from time to time.³⁴

The agreement also explicitly provides for the term of the lease during which time the Lessee would be subject to the requirements of the Federal and State governments as "amended from time to time", and provides for the manner in which it could be terminated. The lease commenced on October 2, 1966, and runs for 99 years, "unless sooner terminated in accordance with the terms of the lease."³⁵ The right to terminate the lease prior to the expiration of its term was reserved solely to the State of Illinois.³⁶

The foregoing provisions of the lease demonstrate that USEC has committed itself through the year 2065 to operate and maintain the Sheffield site in accordance with State and Federal regulation. It is equally clear that USEC did not have the right to terminate unilaterally the arrangement it had with the State or otherwise disregard its undertaking to maintain the site in accordance with NRC regulation. The termination provision reserves the right to terminate the lease solely with the State and the State has yet to exercise that right. USEC does not have the right to terminate the lease and remains obligated to maintain the site pursuant to its express agreement with the State.

Focusing on Art. VII of the lease, USEC argues that it does have the right to withdraw from the site prior to expiration of the term. Article VII, however, does not provide a vehicle for USEC to avoid its obligations under the lease. Rather, under that article, USEC undertook to pay money to the State to establish a fund to be available to the State at the expiration of the lease for long-term maintenance of the site. Acknowledging certain assurances made by the State to the Commission concerning continual and perpetual maintenance of the site, the parties agreed that the fund would be created through yearly fees paid by the Lessee, thereby ensuring that funds would be available in the event that surveillance and maintenance discontinued prior to the expiration of the lease. As USEC has pointed out, the State made certain assurances to the federal government with respect to the site. Pursuant to NRC regulations, the State made arrangements to own the Sheffield disposal site in perpetuity. It further assumed the responsibility for the long-term care, maintenance and surveillance of the site. Moreover, the State assured the Commission that it immediately would assume care and maintenance operations in the event the commercial site operator failed, for whatever reason, to discharge its responsibilities at the site. These assurances made by the State of Illinois to the Commission were essential preconditions for the Commission to authorize activity at the Site, due to the hazardous nature of the activity and the potential threat the unsupervised Site would pose to the public health and welfare.

However, the State's assurance to the Commission that the Site would receive continuing surveillance is not to a release of USEC's obligations under the lease. USEC's focus on Article VII to support that proposition is patently absurd. The plain language of Article VII neither releases USEC from its obligation to maintain the Site, nor does it provide for a liquidated sum to be paid the State in the event of USEC's breach of the lease agreement. The Article provides:

The Corporation understands that the storage and burial of radioactive waste requires perpetual surveillance and maintenance, and so long as it occupies the premises, the Corporation will undertake all surveillance and maintenance as described in Exhibit "B" and as required by all applicable laws, regulations, or licensing for the protection of the public health and safety. The Corporation further understands that if for any reason at any time the Corporation should default or fail to comply with the terms of its license, or for any reason withdraw from the premises, the State would be required to assume surveillance and maintenance obligations and pay the surveillance and maintenance costs.

The Corporation therefore covenants and agrees to pay to the State annually the sum of five cents for each cubic foot of radioactive waste for which burial or storage charges have been made during the preceding year. In order for the State to determine the proper payments of the Corporation, the State shall have access to and the right to examine any directly pertinent books, documents, papers, accounts and records of the Corporation involving operations on the leases premises. Said right shall continue for three years after the termination of this Lease.³⁷.

As the foregoing provision makes plain, USEC understood that the commercial activity in which it engaged, the storage and burial of radioactive waste, required perpetual and continuous surveillance of the site. To this end, NECO agreed to provide

such maintenance while it was on site, and to establish a perpetual maintenance fund available to the State to arrange for long-term institutional care. USEC further acknowledged the fact that should it abandon the premises prior to expiration of the lease, the State would be required to provide immediate maintenance and surveillance of the site to ensure the continuity required by the agreement between the State and federal authorities. As such, USEC agreed to establish the fund by paying an annual fee to the State computed on the basis of quantities buried during the preceding year. In establishing the fund in this manner, the parties ensured that funds would be immediately available in the event the State was required to assume an active role in maintaining the site prior to the expiration of the lease. Thus, in the event USEC failed to discharge its obligations under the lease or under its license, the State would have the financial resources available in the form of the partly-created fund to take immediate corrective action to protect the public health and safety.

Conspicuously absent from Article VII is any language suggesting that the State would excuse USEC from performance of its obligations under the lease or that USEC could unilaterally terminate the lease agreement. USEC's attempt to construe the second sentence of the first paragraph of Article VII as a promise by the State to assume, without recourse against USEC, the lessee's obligations under the lease in the event of breach by the lessee, conflicts with the plain meaning of the language. That sentence does not contain any promises made by the State to

USEC with respect to the State's assuming operations at the site or releasing USEC from liability under the lease. Rather that statement is an acknowledgment made by USEC of the assurances made by the State to the Commission which gives rise to promises USEC made concerning the creation and method of payments of the maintenance fund.

Moreover, neither payment of the fees by USEC nor retention of the accumulation by the State is conditioned on the event of breach. The fund was not created as an alternative for performance on the contract but was itself an unconditional obligation undertaken by USEC. Under Illinois law, a stipulated sum might be construed as a liquidated damage provision only if the agreement discloses an intent by the parties that the sum is to be paid as damages in the event of default. See Baker v. Loves Park Savings and Loan Assoc., 61 Ill. 2d 119, 333 N.E.2d 1, 6 (1975); Northern Illinois Gas Co. v. Energy Co-op, Inc., 122 Ill. App. 3d 940, 461 N.E.2d 1049 (3d Dist. 1984); See also 5 Corbin on Contracts, §1062 (1964); 22 Am. Jur. 2d Damages §212. The clause must provide for a specified amount to be paid for a specific breach as an alternative for performance. See Builder's Concrete Co. of Morton v. Fred Faubel & Sons, Inc., 58 Ill. App. 3d 100, 373 N.E.2d 863 (1978). The sums to be paid by USEC pursuant to Article VII were not to be paid to or retained by the State only in the event of breach. The fund created by that provision was to be available to the State at the expiration of the

lease for perpetual maintenance after NECO's performance. Because the fees were not an advance or security to ensure performance, the notion that Article VII created a condition to excuse further performance by USEC cannot be maintained. USEC's attempt to construe Article VII as a vehicle to escape its legal obligation to maintain the site for the entire term of the lease distorts the language and ignores the essential purpose of Article VII.

3. The Decommissioning Requirements of Part 61 Apply To The Sheffield Case.

The decommissioning requirements of Part 61 apply to the Sheffield license.³⁸ Although the Part 61 requirements were not promulgated until after the license was entered into, the license by its terms is subject to rules and amendments issued by the Atomic Energy Commission and Illinois laws as promulgated and amended from time to time.³⁹

Similarly, the terms and conditions of the license subject it to amendments made by the Commission after its issuance, "as the Commission deems appropriate or necessary in order to... protect health or minimize danger to life of property."⁴⁰ As such, both the lease and the license expressly provide that the licensee understood its undertaking to include requirements that the Commission may add to the license subsequent to its issuance.

Similarly, the license is subject to an evolving regulatory scheme. The scheme has evolved to include a series of explicit decommissioning conditions which must be met prior to termination of the license. The regulations specify rules for

proper closure of a low level nuclear waste burial site. Under the terms of the license and lease, these requirements apply to the Sheffield site.

Moreover, the addition of these requirements subsequent to the issuance of the license transgresses neither due process nor principles of administrative law. The United States Supreme Court has noted the need for flexibility in the administrative context in circumstances such as are found in the present case.

A. Need for Administrative Flexibility

The United States Supreme Court has recognized the need for flexibility in administrative regulation for the resolution of problems, which by their nature, do not lend themselves to a solution by a simple rulemaking process, but rather demand evolving resolution developing over time. In the leading case of SEC v. Chenery,⁴¹ the Court clearly enunciates this principle.

In Chenery, the absence of a codified regulation clearly stating a general standard applicable to the controversy before the Commission did not preclude the agency from enunciating and applying a previously unwritten rule to the concrete situation before it.

The Court noted that denying the administrative agency the power to rule on a case-by-case basis would stifle the administrative process. Instead, the Court affirmed that an agency may have to address problems as they arise on an *ad hoc* basis,

filling in gaps of an Act on an interstitial basis, rather than through a strict general rulemaking process.

The Court stated:

... any rigid requirement to that effect would make the administrative process inflexible and incapable of dealing with many of the specialized problems which arise...

In other words, problems may arise in a case which the administrative agency could not reasonably foresee, problems which must be solved despite the absence of a relevant general rule. Or the agency may not have had sufficient experience with a particular problem to warrant rigidifying its tentative judgment into a hard and fast rule. Or the problem may be so specialized and varying in nature as to be impossible of capture within the boundaries of a general rule. In those situations, the agency must retain power to deal with the problems on a case-to-case basis if the administrative process is to be effective.^{41A}

The matter before this Board presents an analogous situation. The Sheffield license and lease were entered into at the inception of the Commissions's experiment in commercially operated radioactive waste sites. It was essential in such a situation involving highly complex and hazardous activities, that the regulatory framework be allowed to evolve as the experiment developed. It is apparent that this is the exact context recognized by the Chenery decision as requiring a high degree of administrative flexibility.

The Commission is charged with the responsibility of regulating nuclear waste in the national interest and in order to protect the health and safety of the public.⁴² Given the potentially dangerous nature of nuclear waste, the complexity of the

subject matter, and the relatively short history of the commercial radioactive waste disposal program, it is clear that Chenery accords the Commission wide discretion and flexibility to carry out its responsibilities to the public health and welfare. It was in recognition of the complexity of the problem and its corresponding need for flexibility that the Commission conditioned License NO. 13-10042-1 to progressive and evolving amendment and regulation.

B. Codification of prior agency practice
is to be accorded great weight.

While USEC argues that the decommissioning requirements represent an abrupt change of policy, an examination of past agency practice indicates that the argument is without foundation. Part 61 of 10 CFR represents nothing more than a codification of past agency practice as it has evolved since the inception of the radioactive wastes disposal program. The express language of the license, stating that it is subject to amendment and evolving regulation refutes USEC's claim that requiring proper decommission of the site would violate their reasonable expectations and that they would be harmed by the rules' "retroactive" effect.

The Commission historically has reserved for itself the authority to examine and review the adequacy of closure measures taken by licensees in their attempts to terminate their licensees. The discussion above alluded to the Commission's re-examination of 20,000 terminated licenses to assure that decommissioning was accomplished in accordance with public health and

safety. The clear position of the Commission was that it had the power and responsibility to demand of licensees and former licensees that they adequately decontaminate and decommission their sites as part of the final termination of their licenses. This practice has been historically followed by the Commission and must be accorded great weight as established agency practice.⁴³

C. Application of Part 61 Regulations to the License is Not an Invalid Retroactive Imposition of Those Requirements

USEC argues that application of Part 61 regulations to its license constitutes an invalid retroactive application of the Commission's rules. This argument fails given the fact, as noted above, that USEC and its predecessors in interest agreed at the inception of the license to be subject to amendments to federal and state regulations. However, even assuming that USEC had not agreed to accept amendments to the regulations as part of their license, the application of Part 61 requirements to the license would not be an invalid retroactive application of decommissioning requirements. Retroactivity is neither fatal to the validity of an agency order,⁴⁴ nor does it infringe on due process rights,⁴⁵ as USEC claims. Rather, when an agency promulgates a rule which may have retroactive effect, the validity of its application is measured by examining the harm which may occur from a result which is contrary to statutory, legal and/or equitable principles. Weighing these factors, the Court found:

If that mischief is greater than the ill effect of the retroactive application of a new standard, it is not the type of retroactivity which is condemned by law.⁴⁷

In the case before this Board, the balance of equities and hardships runs overwhelmingly in favor of granting the People of the State of Illinois summary disposition as requested in this motion.

In determining whether to give application to a regulatory action which may have a retroactive effect, Chenery and its progeny recognize that all cases of first impression have a retroactive effect.⁴⁶ USEC correctly cites the factors considered by the D.C. Circuit in Retail, Wholesale and Department Store Union, AFL-CIO v. NLRB,⁴⁷ but misapplies them to obtain a result in its favor.⁴⁸

These factors are:

(1) whether the particular case is one of first impression, (2) whether the new rule represents an abrupt departure from well established practice or merely attempts to fill a void in an unsettled area of law, (3) the extent to which the party against whom the new rule is applied relied on the former rule, (4) the degree of the burden which a retroactive order imposes on a party, and (5) the statutory interest in applying a new rule despite the reliance of a party on the old standard.⁴⁹

With respect to the first factor, it is clear under Chenery, that in a case of first impression, retroactive application of an order is more likely to be granted.⁵⁰ That the present case is one of first impression, therefore, cuts in favor of imposing the decommissioning requirements, not against, as USEC incorrectly asserts. The second factor also weighs in favor of Part 61 requirements to License NO. 13-10042-1 because, as noted above, the present case involves an unsettled area of the law

requiring evolving development. In regard to the third factor, it is anomalous for USEC to argue "reliance" when the terms of the lease and the regulations in force at the time the license was issued contemplated further developments of the regulations. The fourth factor, which considers the degree of the burden imposed by retroactive application, must be viewed in light of USEC's attempt to terminate wrongfully their obligations under the lease. USEC already has assumed obligations under the lease from which they are not excused by their attempt at unilateral termination. The decommissioning requirements are consistent with the already existing obligations USEC has under the lease agreement. Finally, in regard to the fifth factor, the NRC has an obvious and all-important statutory interest in protecting the public safety and welfare from the harmful effects of nuclear waste.

The notion that application of Part 61 to the license hearing issue would amount to an invalid retroactive application of the decommissioning requirements can not be seriously maintained. USEC at the outset agreed to accept the burden of the evolving regulatory regime. The terms of the license and regulations and history of agency practice indicate that this is not a "retroactive" rule, but is consistent entirely with the undertaking of USEC in accepting the license, with terms of the license, and with prior agency practice. In addition, the principles of Chenery as applied to this case, indicate that even if Part 61 is a "new" regulation, its application to USEC is valid.

CONCLUSION

As the foregoing conclusively demonstrates, the requirements of the Atomic Energy Act of 1954, rules and regulations of the NRC, License NO. 13-10042-1, and the contractual undertakings of US Ecology with the State of Illinois require that US Ecology be found to be "in possession" of the hazardous radioactive material buried at the Sheffield site. Similarly, it must be ruled that US Ecology can not unilaterally terminate License NO. 13-10042-1 and that license termination requires affirmative action by the NRC.

WHEREFORE, People of the State of Illinois move this
Board to grant its Motion for Summary Disposition.

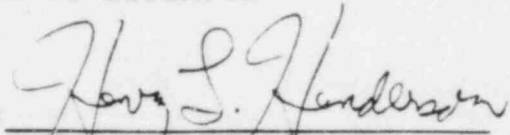
Respectfully submitted,

PEOPLE OF THE STATE OF ILLINOIS

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DATED: NOVEMBER 10, 1986

FOOTNOTES

1. License No. 13-10042-1 was issued in 1964 by the NRC's predecessor, the Atomic Energy Commission (hereafter "AEC"). The NRC took jurisdiction over the License in January, 1975 when it replaced the AEC. For purposes of identification, License No. 13-10042-1 will be referred to herein as "NRC License No. 12-10042-1."
2. Statement of H.L. Price, Director, Division of Licensing and Regulation, U.S. Atomic Energy Commission, Hearings on Industrial Radioactive Waste Disposal, before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, 86th Cong. 1st Sess. (1959) at page 2514. A copy of which is attached hereto as Exhibit 1.
3. ib at 2515.
4. ib.
5. See 10 CFR 20.302, by which the AEC required all land where radioactive wastes would be buried to be owned by the Federal or State governments, was to assure necessary term control of the land in the event the license became unable to maintain the stability of the site.
6. License No. 13-10042-1, with amendments, is attached hereto as Exhibit 2.
7. Amendment No. 7 to License No. 13-10042-1.
8. Amendment No. 7 to License No. 13-10042-1, emphasis added.
9. It is noteworthy that the condition specifying that the License would be subject to evolving regulation (i.e., "rules, regulations, orders of the Atomic Energy Commission now or hereafter in effect") appeared in Amendment No. 1 of the License issued on October 26, 1964, when the License was amended to allow the Licensee some authority "to dispose" of radioactive materials. Thereafter, the License is explicitly subject to this evolving regulatory scheme.
10. Article II of the Lease, a full copy of which is attached hereto as Exhibit 3.
11. ib., Article V of the Lease.
12. U.S. AEC Memorandum By the Division of Materials Licensing In the Matter of California Nuclear, Inc., Docket No. 27-39., pages 6 and 7, as full copy of which is attached hereto as Exhibit 4.
13. License Amendment No. 9, conditions 18-20.
14. Condition 20, License Amendment No. 9.

15. Amendment No. "11."
16. ASLB Memorandum and Order, August 22, 1986
17. 10 C.F.R. Sections 30.3; 40.3; 70.3.
18. See, e.g., State of Illinois Department of Public Health, "Criteria For A Site In Illinois For the Concentration and Storage of Radioactive Wastes," Appendix C to Lease, at Condition VI (B); Proposal of the State of Illinois Department of Public Health "To Build and Operate the Illinois Waste Burial Facility," "Appendix B to Lease; Conditions 6(1)(b); 6(3)(9).
19. USEC Motion, pp. 27-30.
20. USEC Motion, pp. 8-27.
21. 10 C.F.R. Sections 30.3; 40.3; 70.3; See also, Ill. Rev. Stat., 1979, ch. 111 1/2, pars. 216(a), (c); Rules and Regulations for Protection Against Radiation, Dept. of Public Health, 1976, Sections D.301 - D.409.
22. 10 C.F.R. Sections 30.3; 40.3; 70.3.
23. Illinois Radioactive Wastes Act, Ill.Rev.Stat., ch. 111 1/2, par. 230.6.
24. ib., emphasis added.
25. USEC Motion For Summary Disposition, pp. 6-27.
26. See Exhibit 1 at p. 2514.
27. License Amendment No. 6, finding B; Amendment No. 2, finding D, respectively.
28. See, e.g., Amendment 7, Condition 12; Amendment A10.9, Condition 20.
29. A copy of the letter is attached hereto as Exhibit 5.
30. A copy of the letter is attached hereto as Exhibit 6.
31. ib.
32. A report entitled "Evaluation of Docket Files for Terminated Source Material Licenses", NUREG/CR-1010, ORNL/NUREG/TM-342, was promulgated as a result of this project.
33. See, e.g., NRC order to the Cotter Corporation regarding its storage and processing site at Latty Avenue, Hazlewood, Missouri, operated by Cotter Corp. under Source Material License No. SUB-1022.
34. Lease, Art. V., emphasis added.

35. Lease, Art. III.
36. Lease, Art. VIII
37. Lease, Art. VII.
38. 10 CFR §61.24-29
39. "It is expressly understood that the corporation shall comply with all requirements of the Atomic Energy Commission and applicable Illinois laws and rules as the same are promulgated and amended from time to time." Lease Agreement, Article V.
40. 10 C.F.R. Sections 30.34(e); 40.41(e); 70.32(b)
41. 332 U.S. 194 (1946).
- 41A. 332 U.S. at 202-203.
42. 42 USCS §2012-2013.
43. N.L.R.B. v. Bell Aerospace, 416 U.S. 267, 269 94 S. Ct. 1757, 1759 (1974).
44. 332 U.S. at 203.
45. Sewell Coal v. Federal Mine Safety and Health Review Commission, 686 F. 2d 1066, 1070 (4th Dist. 1982)
46. 332 U.S. at 203.
47. 466 F.2d 380 (D.C. Cir. 1972)
48. USEC brief, p.87.
49. 466 F.2d 380, 390.
50. See footnote 2, supra.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

'86 NOV 25 P1:03

Before the Atomic Safety and Licensing Board

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)
)
US Ecology, Inc.) Docket No. 27-39
)
(Sheffield, Illinois Low-Level)
Radioactive Waste Disposal Site))
)

Certificate of Service

I, Henry L. Henderson, Assistant Attorney General,
State of Illinois, hereby certify that copies of the foregoing
Motion for Summary Disposition filed with the Atomic Safety and
Licensing Board in the captioned proceeding have been served upon
the Administrative Judges B. Paul Cotter, Jr., Dr. Emmeth A.
Luebke and Dr. Jerry R. Kline, at their address Atomic Safety and
Licensing Board, U.S. Nuclear Regulatory Commission, Washington,
D.C., by depositing same with Federal Express in Chicago, Illinois.
I further certify that I have caused service of copies to be made
upon the following by deposit in the United States Mail this
10 th day of November 1986:

Atomic Safety and
Licensing Appeal Board
Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Atomic Safety and
Licensing Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Docketing and Service Branch
U.S. Nuclear Regulatory
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Henry L. Wetterhahn
Judge and Attorney General
State of Illinois

RADIOACTIVE WASTE DISPOSAL

radioactive waste is currently stored at
y to lower levels to enable transportation
to suitable levels for transport with

for radioactive waste varies considerably
of the waste. The minimum construction
costs is \$11 per cubic foot of usable

of UG₂ dust at the San Jose facility
operation. Studies indicate that a suit
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contamination of the effluent gases will
backed up by a high efficiency, high tem
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nks to reduce the manhours required per

tion is complicated by the variety and
s being used. Studies of primary inter
sides of mechanical waste compression,
doubtful solids and the possibility of

February 2, 1959, a recess was taken
10 a.m.)

REAL RADIOACTIVE WASTE DISPOSAL

HEARINGS

BEFORE THE

JOINT SUBCOMMITTEE ON RADIATION

OF THE

COMMITTEE ON ATOMIC ENERGY

OF THE UNITED STATES

81ST CONGRESS

FIRST SESSION

ON

INDUSTRIAL RADIOACTIVE WASTE DISPOSAL

JANUARY 28, 29, AND 30; FEBRUARY 2 AND 3, 1959

Volume 4

Printed for the use of the Joint Committee on Atomic Energy



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Disposal Corporation.

INDUSTRIAL RADIOACTIVE WASTE DISPOSAL

TUESDAY, FEBRUARY 3, 1959

CONGRESS OF THE UNITED STATES,
SPECIAL SUBCOMMITTEE ON RADIATION,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The Special Subcommittee of the Joint Committee on Atomic Energy met at 10 a.m., pursuant to recess, in room P-63, the Capitol, Hon. Chet Holifield, chairman of the special subcommittee, presiding.

Present: Representatives Holifield (chairman of the special subcommittee), Durham (chairman of the committee), and Hosmer.

Also present: James T. Ramey, executive director; David R. Toll, staff counsel; and Dr. Walton Rodger, technical adviser of the Joint Committee on Atomic Energy.

Representative HOLIFIELD. The committee will be in order.

The first witness this morning will be Mr. H. L. Price, Director, Division of Licensing and Regulation of the AEC. Please proceed, Mr. Price.

STATEMENT OF H. L. PRICE, DIRECTOR, DIVISION OF LICENSING AND REGULATION, U.S. ATOMIC ENERGY COMMISSION

Mr. PRICE. I have a statement on the Commission's regulatory program, Mr. Chairman, which I believe has been submitted to the committee, and with your permission I will read it.

In discharging its responsibility to regulate and license private atomic energy activities so as to protect the public health and safety, the Commission has developed and placed into effect a comprehensive system of regulations governing the construction and operation of reactors and other nuclear facilities, and the possession and use of source, special nuclear, and byproduct materials (radioisotopes).

Briefly the regulations provide that no person within the United States shall transfer or receive, in interstate commerce, manufacture, possess, transfer, acquire, possess, or use, any production or utilization facility or any source, special nuclear, or byproduct material except as authorized by a license issued by the Commission. The regulations also prescribe such things as the form of application which must be submitted by applicants for licenses; the criteria for radiation protection; and the criteria for issuance of licenses, rules respecting the trans-

H. L. Price, Va., July 3, 1906; A.B. and LL.B., Virginia Tech.; began work at Roanoke, Va., joined with the U.S. Navy during the War; served on the Board, became associated with the Atomic Energy Commission as Assistant Counsel at Oak Ridge in 1947; became Director of the Division of Licensing in 1954; Special Assistant to the General Manager, U.S. Atomic Energy Commission, Division of Civilian Applications, 1955; Director of Licensing and Regulation since December 1957.

fer of licensed materials; recordkeeping requirements; and relating to the amendment, modification, suspension, or revocation of licenses.

Title 10, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation," is the basic regulation dealing with radiation protection and applies to all persons who receive, possess, use, and transfer source material, special nuclear material, or product material under a general or specific license from the Commission. It prescribes the standards and precautionary procedures for the protection of the licensee, his employees, and the public from radiation hazards. The standards specify the maximum radiation doses to which individuals may be exposed, maximum permissible radiation levels in unrestricted areas, maximum concentration values for the discharge of radioactivity into air and water and permissible methods and concentrations for the disposal of radioactive waste. The safety procedures prescribed in the regulation include requirements for personnel monitoring, radiation surveys, posting of areas and equipment with radiation caution signs, introduction of personnel and recordkeeping.

The "Standards for Radiation Protection" are designed to conform with the recommendations of recognized technical authorities, such as the National Committee on Radiation Protection and with the Commission's safety experience in its own operations.

Mr. TOLL. Mr. Price, on your conformance with the recommendations of the NCRP: Do your regulations conform exactly, or are there some variations between AEC regulations, Part 20, and the NCRP recommendations?

Mr. PRICE. I don't think there are any substantial variations. For example, I believe that we have accepted without change the numbers, that is, the exposure limits and concentrations.

Now, we may have had to convert some of those numbers, because we are dealing with the licensee, and we have got to use numbers that tell him how much radioactivity and in what concentrations he can let the material leave his plant, either in air or in water. And those numbers are fixed, so that we feel assured that nobody in the surrounding area will get an exposure in excess of the limits recommended by the NCRP.

So I do not believe there is any variation so far as the technical recommendations are concerned.

Mr. TOLL. As I recall, Professor Frampton, in his Law Review article did point up some differences, primarily as to the age of the people covered.

Mr. PRICE. There are some administrative differences. There is an existence a recommendation of the NCRP, which is I understand now being reviewed with the possibility of revision, a recommendation in the form of a proposed code. We used that as a basis for this regulation that I have been describing, but we probably did not use all of the administrative mechanisms and requirements.

I mean, we probably thought that some of them did not quite lend themselves to a mandatory rule; but so far as the exposure limits are concerned, I do not believe there is any difference between us and the NCRP.

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restricted areas, maximum concentration values
radioactivity into air and water and permissible
rations for the disposal of radioactive waste.
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Mr. TOLL. Are the States encouraged to use the NCRP recommenda-
tions?

Mr. PRICE. That is right. They are. And they are also encouraged
to take the technical recommendations of the NCRP. I expect that
what has happened is that in most of the States that have adopted
this kind of regulation, they have probably followed the pattern of this
handbook, Handbook 61 I think, which we used as a pattern also.
And as a result of that, there may be some minor differences.

I have read Professor Frampton's Law Review article, and I know
that there are these differences between the States, and between the
States and us; but I think it is our feeling that these are differences
of minor detail.

Certainly the States and we are conscious of the importance of uni-
formity here, and I do not think any of us feel that the situation from
the standpoint of differences is any cause for alarm at the present.

It is something that we and the States want to continue to watch
out about.

Mr. TOLL. Thank you.

Mr. PRICE. Because of the varied and complex technical problems
which must be considered in the disposal of significant quantities of
radioactive waste, the Commission's regulations do not attempt to
spell out detailed standards in this area. Rather, they establish per-
missible concentrations in effluents to unrestricted areas and provide
for the disposal of only nominal quantities of nuisance waste by release
into sanitary sewerage systems and by burial in soil, on a routine
basis. These levels of activity are so low as to be considered permissible
under any conceivable conditions of disposal. The regulation provides
that the Commission will consider alternative methods and higher
levels of waste disposal on an individual case basis.

The permissible concentrations in effluents to unrestricted areas are
low. Persons in unrestricted areas could continually breathe the air
and drink the water containing these concentrations without exceeding
the permissible radiation dose during their lifetime. The regulations
are based on the fact that the licensee has no control over the ultimate
fate of the radioactivity after it leaves his premises, and, therefore, the
limit on concentrations is placed on the effluent as it leaves the licensee's
control and enters an unrestricted area. This does not allow the
licensee to take advantage of the additional dilution available in
streams and in air in an unrestricted area without specific approval
from the Commission.

However, a licensee may take advantage of environmental dilution
by proposing in an application to the Commission, higher limits upon
concentrations of radioactive material to be released into air or water
in unrestricted areas as a result of his activities. The Commission
will approve the proposed limits if the applicant demonstrates that it
is not likely that after dilution with available environmental media,
any individual will be exposed to concentrations in excess of the per-
missible limits. This section of the regulation adopts the principle of
using the environment for dilution of the concentrations of radioactive
materials to a safe level. It is intended to provide for safe release from
nuclear facilities and radioisotope laboratories of various low-level
wastes that cannot be economically processed or treated and for which
a suitable environmental condition exists.

It is not intended as a means of disposing of significant quantities of waste that can be economically processed or treated prior to disposal. The regulation also specifies small quantities of nuisance waste that may be disposed of in sewers and buried in soil.

Procedures are incorporated in the regulation whereby any licensee or applicant for a license may apply to the Commission for special approval of proposed procedures to dispose of licensed material in a manner other than as generally authorized in the regulations. The applicant must include a description of the radioactive material, including the quantities and kinds of material, and the proposed manner and conditions of disposal. The application must include a detailed analysis and evaluation of pertinent information as to the nature of the environment, including topographical, geological, meteorological, and hydrological characteristics; usages of ground and surface waters in the general area; the nature and location of other potentially affected facilities; and procedures to be observed to minimize the risk of unexpected or hazardous exposures. The Commission may approve such disposal procedures where the circumstances of the particular case are such as to provide adequate safeguards to public health and safety.

The Commission's regulatory program does more than establish standards which represent the basic ground rules under which atomic energy activities must operate. It is intended to provide reasonable assurance that the standards which have been established to protect health and safety will, in fact, be met. This is accomplished in two ways. First, through a licensing procedure to determine the adequacy of the applicant's proposed health and safety measures prior to operation of a nuclear facility or possession and use of the radioactive material; and, second, through an inspection program to determine compliance with the applicable regulations and licensing conditions after receipt of the material.

LICENSING PROCEDURES

Each applicant for a license to construct and operate a nuclear facility or to possess and use source, special nuclear or byproduct materials, must provide information on equipment and facilities available, training and experience of personnel, safety procedures and a detailed hazard analysis of his proposed operation, which will provide, to the Commission's satisfaction, reasonable assurance that the licensed activity will not present undue risk to public health and safety, either from accidental release of radioactive materials or release from routine operations or from disposal of radioactive waste.

The information and technical data submitted by the applicant is given a thorough review by the Commission's technical staff composed of persons competent in the field of reactor hazards, radiation protection, and waste disposal. In addition, the advice and recommendations of the Advisory Committee on Reactor Safeguards are sought on all proposed power and testing reactors and on other reactors which present new or unusual safety considerations. If necessary, conferences are held between the AEC staff and the applicant's staff to resolve difficult questions that arise in the hazards review. Particular attention is given in the analysis to the radioactive efflu-

RADIOACTIVE WASTE DISPOSAL

means of disposing of significant quantities of mechanically processed or treated prior to disposal specifies small quantities of nuisance waste to be sewers and buried in soil.

may apply to the Commission for specific procedures to dispose of licensed material in cases not authorized in the regulations. The Commission may also prescribe the radioactive material, in the form of material, and the proposed manner of disposal.

The application must include a detailed pertinent information as to the nature of topographical, geological, meteorological, climatic; usages of ground and surface water; nature and location of other potentially hazardous activities; and measures to be observed to minimize the risk of exposures. The Commission may approve applications where the circumstances of the particular case provide adequate safeguards to public health.

atory program does more than establish the basic ground rules under which atomic rate. It is intended to provide reasonable which have been established to protect t, be met. This is accomplished in two ensing procedure to determine the ade- posed health and safety measures prior to y or possession and use of the radioactive h an inspection program to determine ble regulations and licensing conditions

SING PROCEDURES

use to construct and operate a nuclear source, special nuclear or byproduct material on equipment and facilities available of personnel, safety procedures and his proposed operation, which will provide satisfaction, reasonable assurance that the present undue risk to public health and release of radioactive materials or from disposal of radioactive waste.

the Commission's technical staff composed of experts in the field of reactor hazards, radiation safety, and testing reactors and on other related safety considerations. If necessary, the AEC staff and the applicant's staff will cooperate in the hazards review. The results of the analysis to the radioactive effluents will be submitted to the Commission for its review and approval.

INDUSTRIAL RADIOACTIVE WASTE DISPOSAL

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ents which will be discharged to unrestricted areas to assure that the safety standards will be met. If the applicant desires to discharge effluents which exceed the concentrations specified in the part 20 regulation for release of effluents into unrestricted areas, he must provide sufficient information on the various environmental parameters to provide reasonable assurance that individuals in the unrestricted areas will not be exposed to concentrations of radioactive materials above those permissible under the regulations.

METHODS OF DISPOSAL

At present time, the primary source of radioactive waste from licensee operations is from byproduct materials being used in medicine, research, and industry and effluent waste from licensed facilities. The types of waste generated have been characterized in earlier testimony. All of it is of a low-level nature. For the foreseeable future, all high-level waste resulting from processing of spent fuel elements from licensed reactors will be returned to the Commission for processing and handling.

In practice, the most common disposal methods and procedures used by licensees, other than disposal by sewer and burial in soil as provided for in the regulations, are:

1. Return of radioactive waste to AEC installations.
2. Disposal at sea.
3. Treatment by incineration.
4. Transfer to commercial disposal firms.

A. Return of radioactive waste to AEC installations: Since the beginning of the AEC's isotope distribution program in 1946, the Oak Ridge National Laboratory has provided a waste disposal service for AEC radioisotope licensees. The waste must be packaged in accordance with ICC regulations and requirements of the Oak Ridge National Laboratory. The packaged waste is shipped by rail or truck to the Oak Ridge National Laboratory for ground burial. This provides a means of disposing of some solid waste materials for licensees that are within economical shipping distance. One license has been granted to a private concern to collect waste from other AEC licensees and ship it to Oak Ridge National Laboratory for final disposal.

B. Disposal at sea: In 1954, the National Committee on Radiation Protection's recommendations on radioactive waste disposal in the ocean were published in National Bureau of Standards Handbook 58. The Commission has generally followed these recommendations in issuing licenses for disposal at sea. In brief, the criteria provide that disposal shall be in a minimum of 1,000 fathoms of water and the waste shall be packaged in such a manner that under the conditions of handling and shipment the package cannot be easily damaged or broken and will reach the ocean bottom without appreciable loss of contents. The package must have sufficient density to insure sinking to the ocean bottom and must have sufficient shielding to allow safe handling. The package must be appropriately labeled for identification purposes. Packages must conform to applicable shipping regulations of the Interstate Commerce Commission and Coast Guard and conditions of the AEC license. There have been exceptions to these

recommendations with respect to depth of disposal on the individual cases.

The requirement for disposal of package waste in 1,000 fathoms of water does not present a serious problem to licensees on the coast of the United States because of the narrow shelf and depth of the Pacific Ocean at a relatively short distance from the coastline. However, it does present a serious economic problem for those on the east coast because of the long distances (100 to 150 miles) the waste must be transported to reach the edge of the Continental Shelf and depths of 1,000 fathoms.

From technical information available, it now appears that low level of packaged radioactive waste of the type and quality generally from source and byproduct licensees could be disposed of in depths of less than 1,000 fathoms in selected areas on the Continental Shelf.

Because of the wide interest of licensees in disposing of low level of waste in the Atlantic Ocean the Atomic Energy Commission, in cooperation with the National Science Foundation, Fish and Wildlife Service, and Office of Naval Research, has supported a study by the Committee on Oceanography of the National Academy of Sciences to consider the feasibility of establishing designated ocean dumping areas along the Atlantic Ocean on the Continental Shelf. Preliminary information indicates that a favorable report designating such areas may be forthcoming in the near future. A similar study is being conducted for the Pacific Ocean off the coast of California. AEC licensing for sea disposal will be reevaluated in light of these studies.

C. Treatment by incineration: Waste treatment by incineration under controlled conditions may be authorized by the Commission. Treatment by incineration is limited to low level combustible solids such as paper, linens, and small animal carcasses. This treatment reduces the bulk of the waste and is used primarily by research laboratories and hospitals. Residues, if any, are usually collected and buried.

D. Land burial: To date, the Atomic Energy Commission has not issued a license for the commercial disposal of radioactive waste by land burial. Land burial service for licensees has been provided by the Oak Ridge National Laboratory and the Oak Ridge Operations Office on an accommodation basis under a charge of a fixed fee per package. However, large, solid waste volumes and repeated requests for land burial service have become an increasing operational and administrative burden to Oak Ridge National Laboratory during the past 2 years. This condition has been caused primarily by the rapid expansion of nuclear energy uses in the northeastern area of the United States. Approximately one-half of all isotope shipments in the United States are made to the region encompassing Massachusetts, Connecticut, Rhode Island, Maine, New Hampshire, New York, New Jersey, Delaware, Pennsylvania, Maryland, Ohio, Indiana, Illinois, Michigan, and Wisconsin.

In addition, over 50 percent of the research and test reactors being planned or built primarily for research purposes are located in this area. Approximately 75 percent of the power reactor projects being planned or constructed are concentrated in this approximate area. These conditions point strongly to the need for the establishment of a regional radioactive waste burial ground in order to provide the most

respect to depth of disposal on the ocean floor for disposal of package waste in 1954. It presents a serious problem to licensees because of the narrow shelf area of the ocean at a relatively short distance from the shore. It does present a serious economic problem because of the long distances (100 to 200 miles) required to reach the edge of the continental shelf, 200 fathoms.

Information available, it now appears that disposal of waste of the type and quality generated by licensees could be disposed of in depth in selected areas on the Continental Shelf. The interest of licensees in disposing of waste in the Ocean the Atomic Energy Commission, the National Science Foundation, Fish and Wildlife Service, Naval Research, has supported the work of the National Academy of Sciences in establishing designated ocean disposal areas on the Continental Shelf. Preliminary studies have shown that a favorable report designating disposal areas in the near future. A similar study is being conducted off the coast of California. The results will be reevaluated in light of the experience with waste treatment by incineration. Waste treatment by incineration may be authorized by the Commission on a limited to low level combustible waste and is used primarily by research laboratories, if any, are usually collected.

At present, the Atomic Energy Commission's commercial disposal of radioactive waste service for licensees has been provided by the Oak Ridge National Laboratory and the Oak Ridge Operations on a basis under a charge of a fixed fee for solid waste volumes and repeated removal. It has become an increasing operational burden on the Oak Ridge National Laboratory during the past few years. The use of the laboratory for uses in the northeastern area of the country, one-half of all isotope shipments in the country, and the use of the laboratory for the disposal of waste encompassing Massachusetts, Connecticut, New Hampshire, New York, New Jersey, Pennsylvania, Maryland, Ohio, Indiana, Illinois, Michigan, and Wisconsin.

One of the research and test reactors used for research purposes are located in the Northeast. The power reactor projects being concentrated in this approximate area are being concentrated in this approximate area. The need for the establishment of a burial ground in order to provide the

adequate and economic means for packaged solid waste disposal. Technical criteria are being developed and preliminary survey work is being conducted for such a burial ground has been accomplished at several locations. An AEC-licensed commercially operated burial ground may be feasible.

However, there are major administrative problems pertaining to the relationship between the Atomic Energy Commission and a commercial concern which would operate such a facility. For example, consideration must be given to the long-term responsibility of maintaining a burial ground for radioactive materials. Because of the type, level of activity, and half-life of the radioactive wastes, it may be necessary to maintain land burial areas for an extended period of time, perhaps hundreds of years. The feasibility of a commercially operated burial ground under AEC license is largely dependent upon resolution of this problem.

E. Commercial waste disposal agencies: The Atomic Energy Commission has issued licenses to eight commercial firms to collect, package, transport, and dispose of radioactive waste generated by licensees. A list of these licensees is attached to this statement. Six of these companies propose to ultimately dispose of the waste at sea and one commercial concern collects and packages the waste and ships it to the Oak Ridge National Laboratory for land burial. One license has been issued for storage of low levels of radioactive waste.

Each application from a concern to provide a commercial waste disposal service is thoroughly reviewed to assure radiation health and safety from the point of collection of the waste at the licensee's facility, transportation of the material to the commercial concern's processing area, processing, packaging, and storing of the waste, transporting of the waste to the disposal area, and final disposal.

Because of the wide public interest in radioactive materials reaching the environment, the AEC follows the policy of publishing the receipt of applications and proposed issuance of commercial waste disposal licenses in the Federal Register. An opportunity is thereby afforded State and local officials and other interested parties to be fully informed and to request a hearing on such actions if they so desire. To date, the Commission has held hearings on the proposed issuance of licenses to dispose of waste in the ocean of two applications.

Inspection: All licensees are subject to periodic inspection by the AEC to assure that the regulations and the terms and conditions of the licenses are being complied with.

Each licensee is required to maintain complete records of receipt, transfer, and disposal of all radioactive materials. If radioactive materials are disposed of through effluents into the air or water, records of average concentrations discharged must be kept. Disposal to the sewer and by burial in soil in accordance with the Part 20 regulation must also be recorded. Also, the types and quantities of activity transferred to a commercial waste disposal concern must be recorded. Concerns licensed to dispose of wastes commercially must maintain records of types and quantities of radioactivity received and the location and date of disposal. These records, together with the licensee's operating procedures, are carefully reviewed by the inspector to assure compliance with regulations and the terms and conditions of the license.

If inspection discloses evidence of noncompliance, appropriate action is taken promptly by the Commission to assure that the licensee corrects the deficiencies. If necessary, the Commission may take appropriate corrective action. Under the Atomic Energy Act of 1954, the Commission has authority to take procedural action to revoke, suspend, or modify any license where such action is necessary, to assure protection of health and safety to the public.

Review of policies and standards: The radioactive waste problem in AEC licensee operations to date have been low-level, small-volume waste. We believe that the policies and standards established by the Commission for disposal of radioactive waste by AEC licensee provide, in accordance with present knowledge, a substantial margin of safety to the public.

However, as additional reactors go into operation and the total radioactive isotopes increases, the trend will be toward ever-increasing quantities of waste. The disposal of large volumes of radioactive waste presents complex problems. It will be necessary to continue to support research work in such areas as sea disposal and disposal of low-level, high-volumes of waste into the environment.

The policies and standards of the Commission in the field of radioactive waste disposal are under continuous review and are subject to change with the development of new knowledge.

(The appended material follows:)

Firms licensed to provide a commercial waste disposal service

License No. and expiration date	Institution	Type of material authorized	Possession limit
4-748-4 Jan. 31, 1959	American Electronics, Inc., Reed-Curtis Nuclear Ind., 9459 West Jefferson Blvd., Culver City, Calif.; Mr. Larry R. Curtis.	Byproduct material atomic Nos. 3-43, inclusive, and source material.	10 curies.
20-665-2 Aug. 31, 1958 (renewal pending).	Crossroads Marine & Salvage Co., Boston, Mass.; Mr. George C. Perry, Port: Boston, Mass.	Byproduct material atomic Nos. 3-43, inclusive, and source material.	Byproduct material, 10 curies; source material, 4,000 pounds procurement limit.
4-3766-1 Sept. 30, 1960	Nuclear Engineering Co., Inc., 2600 North Main St., or Naval Industrial Re- serve Shipyard, Kearny, N.J.; Walnut Creek, Calif.; Mr. J. E. Law.	Byproduct material, source material, and special nu- clear material.	Byproduct material, 100 curies; special nuclear ma- terial, 4 grams; source material, 2,000 pounds.
4-580-5 Aug. 31, 1960	Isotopes Specialties Co., 170 West Providence, Burbank, Calif.; Mr. Allen Goldstein.	Byproduct material and source material.	Byproduct material, 100 curies; source material, 2,000 pounds.
20-3541-1 Sept. 30, 1960	New England Tank Clean- ing Co., 135 1st St., Cam- bridge 41, Mass.; Mr. E. W. Demault, Jr., Port: Boston, Mass.	Byproduct material, source and special nuclear ma- terial.	Byproduct material, 100 curies; source material, 20 pounds; special nuclear ma- terial 5 grams.
46-3623-1 Aug. 31, 1960	American Mail Line, Ltd., 140 Stuart Bldg., Seattle 1, Wash.; Mr. M. V. Walker, Port: Seattle, Wash.	Byproduct material and source material.	Byproduct material, 10 curies; source material, 10 pounds procurement limit.
31-1672-1 Dec. 31, 1960	Radiological Services Co., 26-22 Astoria Blvd., Long Island City, N.Y.; Mr. Herman Glasser.	Atomic Nos. 1-43 and source material waste, ORNL.	Byproduct material, 10 curies, except uranium, 10 megacycles; source material, 15 pounds.
4-37-2 Apr. 30, 1959	Atomic Energy Waste Disposal Service, 5410 Bond St., Oakland 1, Calif.; Mr. Russ Simpson.	Atomic Nos. 3-43, inclusive, and source material, storage only.	1 curie.

dence of noncompliance, approach the Commission to assure that the license is necessary, the Commission may take action requiring the licensee to take action under the Atomic Energy Act of 1954. If such action is necessary, to assure the public.

Standards: The radioactive waste generated to date have been low-level, small. Policies and standards established by the Atomic Energy Commission for the disposal of radioactive waste by AEC licensees represent knowledge, a substantial

Factors go into operation and the trend will be toward ever-increasing disposal of large volumes of radioactive materials. It will be necessary to continue in areas as sea disposal and disposal into the environment. The Commission in the field of radioactive waste is under continuous review and are subject to new knowledge.

How do you see the future of commercial waste disposal services?

Type of material authorized	Possession limit
Byproduct material atomic No. 3-63, inclusive, and source material.	10 curies.
Byproduct material atomic No. 3-64, inclusive, and source material.	Byproduct material, 10 curies; source material, 4,000 pounds (progressive limit).
Byproduct material, source material, and special nuclear material.	Byproduct material, 100 curies; special nuclear material, 4 grams; source material, 2,000 pounds.
Byproduct material and source material.	Byproduct material, 100 curies; source material, 2,000 pounds.
Byproduct material, source material, and special nuclear material.	Byproduct material, 100 curies; source material, 4 pounds; special nuclear material, 5 grams.
Byproduct material and source material.	Byproduct material, 100 curies; source material, 2,000 pounds (progressive limit).
Atomic No. 1-63 and source material waste, ORNL.	Byproduct material, 100 curies, except uranium, 100 megacuries; source material, 15 pounds.
Atomic No. 3-63, inclusive, and source material, storage only.	1 curie.

Representative HOLIFIELD. Thank you, Mr. Price. How many employees are in your Division of Licensing and Regulation?

Mr. PRICE. Mr. Holifield, the total employment is 101. In addition two new appointees are due to report for duty by February 15.

Representative HOLIFIELD. A total of 103.

Mr. PRICE. That is clerical and secretarial and professional included.

Representative HOLIFIELD. How many of those are devoted to the formulation of regulations, and how many are devoted to actual policing of the compliance to the regulations?

Mr. PRICE. First, Mr. Holifield, the policing of compliance is handled by the Inspection Division which is a separate Division.

Representative HOLIFIELD. How many do they have? How many employees?

Mr. PRICE. The figure is 43 inspectors and 20 clerical employees.

Representative HOLIFIELD. You will have 103 in the Regulation Division?

Mr. PRICE. In Regulation and Licensing, yes, sir.

Representative HOLIFIELD. Are these people constantly traveling around the country seeing that these regulations are complied with, or are they resident here in Washington?

Mr. PRICE. The people in my Division, in Licensing and Regulation, are mostly here in Washington. They may go out and visit an installation in order to gather information that they need in the review of a licensing application, or they may go out as part of a team to investigate an incident for purposes of gathering information useful in the administration of the regulatory program. But the traveling around for purposes of compliance inspection—that is done by the Inspection Division, which is separate.

Representative HOLIFIELD. Is the Inspection Division independent of the Licensing and Regulation Division?

Mr. PRICE. That is right.

Representative HOLIFIELD. They function under their own autonomy and have no supervision from your agency? From your Division of Licensing and Regulation?

Mr. PRICE. That is right. The Director of the Inspection Division reports to the General Manager, and I report to the General Manager.

Representative HOLIFIELD. Who is the Director of the Inspection Division?

Mr. PRICE. Mr. Curtis Nelson.

Of course, we have to work closely together, because when they make an inspection of a licensee, if they find the evidence of noncompliance, this evidence is turned over to us, and then we take the steps to issue whatever orders, enforcement orders, are appropriate, setting up hearings and that sort of thing.

Representative HOLIFIELD. Or revoking the license?

Mr. PRICE. Or revoke the license; yes.

Representative HOLIFIELD. Do you consider the Licensing and Regulation Division as an objective and independent operating group, or are they influenced by policy decisions of the Atomic Energy Commission?

Mr. PRICE. Mr. Holifield, I consider them completely independent. The Commission has set the Licensing and Regulation Division with no responsibilities whatever to build or construct reactors, administer any reactor or other programs, or to spend any money to make any contracts. We have none of that. We have no responsibilities whatever to promote any atomic energy activity other than the responsibility that we have by law to balance the needs of the public and safety against the objective of having a national atomic program.

I consider and the Commission considers our Division completely separate, and we are, so far as the staff is concerned, the judicial arm of the Commission.

Representative HOLIFIELD. What is the attitude of industry toward your controls, both in the Licensing and Regulation, and Information Divisions?

Mr. PRICE. I am not sure that I will fairly characterize it. I can say this, that I expect that many people in industry think that the regulations and licensing requirements are too strict.

On the other hand, I think there is a general recognition by industry that we are dealing with a difficult new field, and if we err on the side of caution, it is probably justified.

Representative HOLIFIELD. Are you in receipt of constant complaints and criticisms of your regulation?

Mr. PRICE. No, sir.

Representative HOLIFIELD. In general, does industry seem to feel that they can live with and get along with your regulations?

Mr. PRICE. That is right. I would be the first to say that there is an area in which we have got to be forever on guard to be sure that we do not have unnecessary requirements; also to be sure that we have not overlooked something that is necessary; but I do not have any feeling that industry is completely unhappy.

Of course, industry basically does not like to be regulated for any purpose; but I think there is general recognition of the necessity for it here, and we get few complaints. But considering the fact that there are about 4,000 or 5,000 isotope licensees and a couple thousand other materials licensees, and then the facility licensees, I would expect that we would get a few complaints once in a while, and we do.

Representative HOLIFIELD. I am sure you do. But my question was directed toward whether there were a great number of these complaints and the general feeling that you were a little too tight on them, or whether there were just occasional complaints.

Mr. PRICE. From what I hear, and the people who have talked to me, it would be just occasional, very occasional; not frequent.

Representative HOLIFIELD. What position are you in, as the Regulating and Licensing Division, when it comes to approving a reactor site? What is the procedure there?

Mr. PRICE. The procedure there is that the applicant has to bring in an application for a license for a reactor at his chosen site with necessary hazards information, safety information, relating to the site, and enough information relating to his proposed reactor to be able to deal effectively with the site. We get that application, and then we have in my Division, under Dr. Clifford Beck, what we call a Hazards Evaluation Branch. These are technical people that look at all the hazardous aspects of a reactor project. They analyze it,

I consider them completely independent. The Licensing and Regulation Division never to build or construct reactors, other programs, or to spend any money on any of that. We have no money to have any atomic energy activity other than by law to balance the needs of the active of having a national atomic

Commission considers our Division comparable as the staff is concerned, the Commission.

What is the attitude of industry to the Licensing and Regulation, and the Commission?

That I will fairly characterize it. In many people in industry think the requirements are too strict.

Is there a general recognition by industry of a difficult new field, and if we are fully justified.

Are you in receipt of constant requests for regulation?

In general, does industry seem to get along with your regulations?

I would be the first to say that there is to be forever on guard to be sure that requirements; also to be sure that we have what is necessary; but I do not have any completely unhappy.

Why does not like to be regulated for any general recognition of the necessity for complaints. But considering the fact that 10 isotope licensees and a couple thousand then the facility licensees, I would expect complaints once in a while, and we do.

I am sure you do. But my question is whether there were a great number of them or whether they were just occasional complaints.

Very occasional; not frequent.

What position are you in, as the Regulator, when it comes to approving a reactor there?

There is that the applicant has to bring for a reactor at his chosen site with safety information, relating to the reactor, relating to his proposed reactor to be at the site. We get that application, and under Dr. Clifford Beck, what we call

These are technical people that look of a reactor project. They analyze it

and on all power and testing reactors, and frequently on the other facilities, like the larger research reactors, the cases are also referred to the Advisory Committee on Reactor Safeguards.

They review it. The company is brought in to discuss the project with the Safeguards Committee and our staff. The Safeguards Committee makes a report to the Commission. My staff then works up a proposed position on the case.

If it is a research reactor, I can go ahead and act myself and issue the license, or deny it. If it is a power or test reactor—first, I have to give, even on research reactors, notice of proposed intention, so that any party or any applicant or any other person that might want to intervene could demand a hearing. Then we would have a hearing before a hearing examiner.

On the power and test reactors, we are required by law, whether anybody asks for a hearing or not, to set the case down for hearing before a hearing examiner, and in that case, from then on my staff is a party to the proceeding.

We take a position, representing the Government, the public interest as we see it. The applicant puts his case on the record. Any intervenors are allowed to come in and participate and object or support the application.

And then, on the basis of that record, the hearing examiner makes the decision, the intermediate decision, himself, and it is subject to appeal to the Commission.

In those cases I am completely separated from the hearing examiner and from the Commission. I mean, I only deal with them on the public record.

Representative HOLIFIELD. Let us take the case of the Piqua project. What was the chronology of that? Did you issue a license to those people to build the Piqua project or participate in it?

Mr. PRICE. No, sir. The Piqua project was one of those projects in—I forget whether it was the second or third round.

Representative HOLIFIELD. The second round.

Mr. PRICE. Anyway, it is a case where it was purely a contract negotiation matter, and it was not considered subject to licensing, because the Government was going to own the facility and because of the fact that it would be operated under Government contract pursuant to that second round program.

So they have never applied for a license, and I think it has been considered right along that they are not subject to license; that the safety aspects of that case would be handled under contract administration.

Even so, in the case of other Government-owned reactors, like the ones at testing stations and even the military reactors, we still review them.

The Commission causes them to be reviewed from the standpoint of safety, including site.

Last fall, or I guess it was late last summer, when sufficient information had been developed on the Piqua proposal, including the site, it was submitted to us for review, and we immediately looked at it in my Division, from the safety standpoint, and we immediately took it up with the Advisory Committee on Reactor Safeguards.

And I guess you are familiar with the chronology since then. The Safeguards Committee made a report that the initial site that was

proposed was not suitable. The case is still being reviewed, consideration is being given to an alternate site.

Representative HOLIFIELD. Well, now, this negotiation has been going on for about 3 years.

Mr. PRICE. That is right, sir.

Representative HOLIFIELD. Part of the basic consideration Piqua people was that the site which they selected would be appropriate which would enable them to utilize conventional turbines and generators.

It seems to me that somewhere along the line there has been a failure on the part of the Atomic Energy Commission to reach that a prior determination as to safety of site should have preceded the negotiation of all of the corollary factors involved, in that government-private party negotiation. We find ourselves at the 2½ or 3 years now with the original site apparently unsatisfactory and this means that a new site has to be selected.

It could mean the complete withdrawal of the Piqua people from the project because of the failure to approve their first site. In the event, if they change, it means a great deal more expense to them, a great deal more negotiation, and planning on a different basis.

Has anything been done to preclude such a cart-before-the-horse operation as seems evident in this case?

Mr. PRICE. Yes, sir. In those early demonstration programs, the theory was that the Commission would get the proposal and work out the contract arrangements, which in all cases took several years. I mean, the money part of it—and then make it subject to a safety review. And then the result, as you just described, happened.

I think the plan is well accepted now that in future cases the persons proposing projects under these Government-participation programs, the demonstration programs, will be required to submit the site data and enough information about the reactor project at the very beginning before the Commission will act on the acceptability of the proposal under a demonstration program, so that I do not expect that this will happen on those cases again.

Of course, you realize now that this is something different than the licensing cases. The time when a licensee comes in is up to him. I mean, it is his money and his project, and, of course, they have all come in early, because they wanted to find out how they stood on those matters. And we have not had this problem in any of the license cases.

Representative HOLIFIELD. Well, that is true. However, let us get to this point of granting a license to non-Government users, in which the public interest is preserved by right of protest and by right of objective review.

Yet, on a governmental facility, how do you compensate for the protection of the public, the right to protest and the right to review? In this particular instance, it seems to me that the AEC takes over all arbitrary right to make the decisions, and there does not seem to be the same right of protest and right of objective review.

Mr. PRICE. Mr. Hollifield, in the case of the Government-owned reactors, they are put through the same safety review within the Commission by the same people as the license cases. The same technical staff in my Division reviews them, and in those cases they go to the same Advisory Committee on Reactor Safeguards.

The case is still being reviewed, and an alternate site.

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failure to approve their first site.

means a great deal more expense to the

and planning on a different basis.

to preclude such a cart-before-the-horse

in this case?

those early demonstration programs

which would get the proposal and

which in all cases took several years

and then make it subject to a safety

as you just described, happened.

accepted now that in future cases the

for these Government-participation

programs, will be required to submit

information about the reactor project at the very

beginning. The program will act on the acceptability of the

program, so that I do not expect this

to happen again.

that this is something different than the

when a licensee comes in is up to him. I

the project, and, of course, they have all

wanted to find out how they stood on the

and this problem in any of the license

cases.

Well, that is true. However, let us go

back to non-Government users, in which

cases, by right of protest and by right of

review, how do you compensate for the

right to protest and the right to review?

It seems to me that the AEC takes over

the decisions, and there does not seem to

be any right of objective review.

In the case of the Government-owned re

actors, the same safety review within the Com

mission's license cases. The same technical

standards, and in those cases they go to the

Reactor Safeguards.

What does not happen is the administrative procedure that you mentioned, the right to a public hearing in those cases; and, of course, the law does not require that there be a hearing and these procedures are not on the license cases.

All I can say is that we are aware, keenly aware, of the fact that to the general public a Government power reactor sitting out in the middle of the country looks like and acts just like a licensed reactor, and the public probably has some concern about it, and we have for a year tried to figure out the best way of affording the public a right to hearings here. There are a lot of complications to it, but I am sure for the future we will work out a procedure under which the public will have the same rights on these Government power reactor projects that they have on the licensed power reactor projects.

Representative HOLIFIELD. It is always to be assumed that the Government will act responsibly in its determinations, where it has the complete power, particularly in a field of this kind. However, it does seem to me that we have found in some instances the Government acting hastily; and where they have the power, they have sometimes utilized the power in an arbitrary way.

I can think of instances that have come within my own personal knowledge, of condemnation of areas for military use without the proper checking or the proper notification of local people. I have been on investigating committees that have investigated these occasions where the military moved in and exercised their arbitrary right of eminent domain without proper consideration of local conditions and local interests.

And certainly in this field here, where we are dealing with something where we have built very carefully a modus operandi which would protect the environment, the people in the surrounding area, from capricious use or capricious licensing and regulations, it certainly seems that a parallel method of protecting the people from their own Government should be involved; maybe not with the same administrative procedure, not bringing that under the Administrative Procedure Act, but certainly to the point of notification and the right of protest being given to responsible organizations or people in the immediate area.

Mr. PRICE. Mr. Chairman, we are committed to that proposition, and I have no doubt that for the future we will be able to work something out for these types of cases.

Representative HOLIFIELD. And we can be assured that there will be no future action such as occurred in the Piqua case, where the very important matter of site selection was almost overlooked and all the other areas of negotiation were entered into over a period of some 20 years, and then suddenly we find that the site becomes the most important and the controlling factor, and there is an obligation to change the site.

When our committee was over in Europe, we looked into this matter, particularly in the Scandinavian countries and England, and we found out that basically nothing goes ahead until the site is determined. In other words, they put the cart where it belongs, behind the horse, it seems to me, and they determined first: is the site safe? Is it proper? And then they start negotiating on the other factors of it.

It seems to me this is just a commonsense way to proceed. The Commission will proceed in that way in the determination of sites, whether they be for private reactors or for Government reactors, in the future.

Mr. PRICE. Yes, sir. Of course, as I understand the technical side, including the Safeguards Committee, you can look at a site and say it looks like a pretty good site, but you are still not willing to say for sure it is going to be all right until you know more about the design of the reactor, what kind of a reactor can be put in.

Representative HOLIFIELD. This is why I think that your designers and builders of reactors should be fairly well certain of the type of reactor that is going to be built, its size and potential hazard, something to type, before they set on a site; rather than to pick out a site and say, "We are going to build some kind of a reactor; we don't know what kind it is going to be; we don't know what its hazards will be or anything like that."

The study and presentation should occur before the selection of a site and not after the selection of the site, whether it is the Government or private industry.

Are there any further questions of Mr. Price?

If not, we thank you, Mr. Price, for your testimony.

Mr. PRICE. Thank you, sir.

Representative HOLIFIELD. We have another witness, Dr. D. E. Price of the U.S. Public Health Service.

Dr. Price, we are happy to have you before us this morning. You may proceed.

STATEMENT OF DAVID E. PRICE, M.D., CHIEF, BUREAU OF STATE SERVICES, U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

INTRODUCTION

Dr. PRICE. The Public Health Service welcomes this opportunity to discuss its role in matters relating to radioactive wastes. Our activities have grown out of work in the field of water pollution based on both general and specific statutory authority, and our long-established responsibility for assisting the States in various health pro-

¹Born in San Diego, Calif. in 1914, and received his M.D. degree at University of California School of Medicine in 1940. He is married and lives with his wife and two children, William and Janet, at 5215 Elamere Ave., Bethesda, Md.

Assistant Surgeon General of the Public Health Service, U.S. Department of Health, Education, and Welfare.

Since October 1957, he has been Chief of the Bureau of State Services, one of the four major bureaus of the Public Health Service. Centered in this Bureau are the programs of financial grants to States, consultation and training services, and research and demonstrations which help State and community health departments to extend services and to carry out programs for the control of preventable disease and accidents, and the maintenance of a healthful environment.

Commissioned in the Public Health Service in 1941, and during the next 4 years had varied experience in State, local, and Federal health programs with special attention to venereal disease control.

In 1944, he entered Johns Hopkins University School of Hygiene and Public Health for graduate work in public health administration and received the Doctor of Public Health degree in 1946.

He was then assigned to the National Institutes of Health, the research arm of the Public Health Service. He was raised to the rank of Assistant Surgeon General where he became Associate Director of the National Institutes of Health in 1950.

In 1952, he was assigned to the Office of the Surgeon General, the administrative bureau of the Service, where he served until March 1957. Following a 6-month assignment (March-October 1957) as Deputy Chief of the Bureau of Medical Services, he assumed his present position.



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

I-B, I I-1/5

BYPRODUCT, SOURCE AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.
2323 SOUTH NINTH STREET
LAFAYETTE, INDIANA
DOCKET NO. 27-39

eff: 7-15-64
LICENSE NO. 13-10042-1

exp. 7-31-66

Pursuant to the Atomic Energy Act of 1954, as amended, 10 CFR 30, "Licensing of Byproduct Material," 10 CFR 40, "Licensing of Source Material," 10 CFR 70, "Special Nuclear Material," and in reliance upon the statements and representations contained in the application dated October 23, 1963, *octd* and amendments thereto dated December 9, 1963, and April 21, 1964, *octd* *and* a license is hereby issued to California Nuclear, Inc., 2323 South Ninth Street, Lafayette, Indiana, to receive and possess sealed packages containing waste byproduct, source and special nuclear material at customers' facilities in any state of the United States except in "Agreement States" as defined in Section 150.3(b), 10 CFR 150, and to transport the sealed packages to authorized land burial sites for disposal.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to the provisions of 10 CFR 20, "Standards for Protection Against Radiation," all other applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect, and to the following conditions:

JUL 15 1964

1. The licensee shall not possess at any one time more than 1,000 curies of byproduct material, 4,000 pounds of source material, and 500 grams of special nuclear material of which not more than 20 grams of Uranium 235 or 1 gram of Uranium 233 and Plutonium shall be in any single package.
2. Byproduct, source and special nuclear material shall be received and transported by, or under the supervision and in the physical presence of, Frederick P. Beierle or William D. Johnson.
3. A copy of the "Radiological Physics Safety Manual for Atomic Energy Commission Operations" dated April 21, 1964^{added}, shall be supplied to each employee involved in the receipt and transportation of byproduct, source and special nuclear material.
4. The transportation of AEC-licensed material shall be subject to the applicable regulations of the Interstate Commerce Commission, United States Coast Guard, and other agencies of the United States having appropriate jurisdiction, and where such regulations are not applicable shall be in accordance with the following requirements except as specifically provided by the Atomic Energy Commission:
 - A. Outside Shipping Containers
 - (1) The containers shall meet any one of the following specifications described in Appendix A attached hereto:
 - a. 15A, 15B, 12B, 6A, 6B, 17C, 17H, 19A, or 19B for the containment of radioactivity in amounts not in excess of 2.7 curies; except polonium, 2 curies; or

- b. Specification 55 for containment of solid cobalt 60, cesium 137, iridium 192, or gold 198 in amounts not in excess of 300 curies.
- (2) There shall be no radioactive contamination on any exterior surface of the container in excess of 500 d/m/100 sq. cm. alpha and 0.1 mrep/hr beta-gamma radiation.
 - (3) The smallest dimension of the container shall not be less than 4 inches.
 - (4) The radiation level at any accessible surface of the container shall not exceed 200 mrem/hr.
 - (5) At one meter from any point on the radioactive source the radiation level shall not exceed 10 mrem/hr.
 - (6) Containers which contain radioactive material emitting only alpha and/or beta radiation shall contain sufficient shielding to prevent the escape of primary corpuscular radiation to the exterior surface and to reduce the secondary radiation at the surface of the container so that it does not exceed 10 mrem/24 hours at any time during transportation.

B. Inside Containers

- (1) Solid and gaseous radioactive materials shall be packed in suitable inside containers designed to prevent rupture and leakage under conditions incident to transportation.
- (2) Liquid radioactive materials must be packed in sealed glass, earthenware, or other suitable containers. The container must be surrounded on all sides by an absorbent material sufficient

to absorb the entire liquid contents and be of such nature that its efficiency will not be impaired by chemical reactions with the contents. Where shielding is required the absorbent material must be placed within the shield. If the inside container meets the Specification 2R in Appendix A the absorbent material is not required.

- (3) Materials containing radioisotopes of plutonium, americium, polonium or curium or the isotope strontium 90, in quantities in excess of 100 microcuries, must be packed in containers which meet Specification 2R in Appendix A.

C. Shielding

Inside containers must be completely surrounded with sufficient shielding to meet the requirements of subparagraphs A(4), A(5), and A(6) of this condition. The shield must be so designed that it will not open or break under normal conditions incident to transportation.

D. Labeling

Each outside container label required under Section 20.203(f) of 10 CFR 20 shall bear the following information:

- (1) Total activity in millicuries, or in the case of source and special nuclear material, the total weight;
- (2) principal radioisotope;
- (3) radiation level at the surface of the container and at one meter from the source; and

(4) the name and address of the licensee.

- E. Each vehicle in which licensed material is transported shall be marked or placarded on each side and the rear with lettering at least 3 inches high as follows: "DANGEROUS - RADIOACTIVE MATERIAL."

F. Accidents

In the event of an accident involving any vehicle transporting licensed material, immediate steps shall be taken to prevent radiation exposure of persons and to control contamination.

G. Exemptions

Specific approval must be obtained from the Atomic Energy Commission for modification of, or exemption from, the requirements of the license condition. Requests for such approval should be directed to the Chief, Isotopes Branch, Division of Materials Licensing, Atomic Energy Commission, and should contain sufficient information to support such a request.

5. The licensee shall not store byproduct, source and special nuclear material in any of the states in which the licensee is authorized to receive and possess such material under the terms of this license.
6. Except as specifically provided otherwise by this license, the licensee shall receive, possess, and transport byproduct, source and special nuclear material in accordance with the conditions, limitations, and procedures contained in the application dated October 23, 1963, and amendments thereto dated December 9, 1963, and April 24, 1964.

This license shall be effective on the date issued and shall expire two years from the last day of the month in which this license is issued.

FOR THE ATOMIC ENERGY COMMISSION

Date of Issuance: 7-15-64

BYPRODUCT, SOURCE AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.
2323 SOUTH NINTH STREET
LAFAYETTE, INDIANA
DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 1

amend #2, #3, #4

10-26-64
10-31-64

In accordance with application dated August 18, 1964, and amendments thereto *att'd*
dated August 28, 1964, and September 18, 1964, License No. 13-10042-1 is *att'd*
amended in its entirety to read as follows:

Pursuant to the Atomic Energy Act of 1954, as amended, 10 CFR 30, "Licensing
of Byproduct Material," 10 CFR 40, "Licensing of Source Material," 10 CFR 70,
"Special Nuclear Material," and in reliance upon the statements and represen-
tations contained in the application dated October 23, 1963, and amendments *encl base*
thereto dated December 9, 1963, and April 21, 1964, and in the application *encl base*
dated August 18, 1964, and amendments thereto dated August 28, 1964, and Sep- *att'd*
tember 18, 1964, a license is hereby issued to receive, transport to, process, *att'd*
repackage, and store waste byproduct, source and special nuclear material at
the facility described in the application located in Benton County, Washington,
and to dispose of these materials by transfer to authorized land burial sites.

This license shall be deemed to contain the conditions specified in Section
103 of the Atomic Energy Act of 1954, as amended, and is subject to the provi-
sions of 10 CFR 20, "Standards for Protection Against Radiation," all other
applicable rules, regulations, orders of the Atomic Energy Commission now or
hereafter in effect, and to the following conditions:

1. The licensee shall not possess at any one time more than 50,000 curies of byproduct material; 4,000 pounds of source material; and 5,000 grams of special nuclear material of which not more than 20 grams of Uranium 235, 1 gram of Uranium 233 and 1 gram of Plutonium shall be in any single package. The minimum volume of a package containing special nuclear material shall be one cubic foot. *(See Amend #3)*
2. Operations shall be conducted by Frederick P. Beierle, William D. Johnson, George L. Helgeson or individuals designated by the licensee's radiation protection officer upon satisfactory completion of the training program described in the application. *Amend #4*
3. A copy of the "Radiological Physics Safety Manual for Atomic Energy Commission Operations" dated April 21, 1964, shall be supplied to each employee engaged in operations under this license. *and issue*
4. The transportation of AEC-licensed material shall be subject to the applicable regulations of the Interstate Commerce Commission, United States Coast Guard, and other agencies of the United States having appropriate jurisdiction, and where such regulations are not applicable shall be in accordance with the following requirements except as specifically provided by the Atomic Energy Commission:
 - A. Outside Shipping Containers
 - (1) The containers shall meet any one of the following specifications described in Appendix A attached hereto:

- a. 15A, 15B, 12B, 6A, 6B, 17C, 17H, 19A, or 19B for the containment of radioactivity in amounts not in excess of 2.7 curies; except polonium, 2 curies; or
 - b. Specification 55 for containment of solid cobalt 60, cesium 137, iridium 192, or gold 198 in amounts not in excess of 300 curies.
- (2) There shall be no radioactive contamination on any exterior surface of the container in excess of 500 d/m/100 sq. cm. alpha and 0.1 mrep/hr beta-gamma radiation.
 - (3) The smallest dimensions of the container shall not be less than 4 inches.
 - (4) The radiation level at any accessible surface of the container shall not exceed 200 mrem/hr.
 - (5) At one meter from any point on the radioactive source the radiation level shall not exceed 10 mrem/hr.
 - (6) Containers which contain radioactive material emitting only alpha and/or beta radiation shall contain sufficient shielding to prevent the escape of primary corpuscular radiation to the exterior surface and to reduce the secondary radiation at the surface of the container so that it does not exceed 10 mrem/24 hours at any time during transportation.

B. Inside Containers

- (1) Solid and gaseous radioactive materials shall be packed in suitable inside containers designed to prevent rupture and leakage under conditions incident to transportation.
- (2) Liquid radioactive materials must be packed in sealed glass, earthenware, or other suitable containers. The container must be surrounded on all sides by an absorbent material sufficient to absorb the entire liquid contents and be of such nature that its efficiency will not be impaired by chemical reactions with the contents. Where shielding is required the absorbent material must be placed within the shield. If the inside container meets the Specification 2R in Appendix A the absorbent material is not required.
- (3) Materials containing radioisotopes of plutonium, americium, polonium or curium or the isotope strontium 90, in quantities in excess of 100 microcuries, must be packed in containers which meet Specification 2R in Appendix A

C. Shielding

Inside containers must be completely surrounded with sufficient shielding to meet the requirements of subparagraphs A(4), A(5), and A(6) of this condition. The shield must be so designed that it will not open or break under normal conditions incident to transportation.

D. Labeling

Each outside container label required under Section 20.203(f) of 10 CFR 20 shall bear the following information:

- (1) Total activity in millicuries, or in the case of source and special nuclear material, the total weight;
- (2) principal radioisotope;
- (3) radiation level at the surface of the container and at one meter from the source; and
- (4) the name and address of the licensee.

E. Each vehicle in which licensed material is transported shall be marked or placarded on each side and the rear with lettering at least 3 inches high as follows: "DANGEROUS - RADIOACTIVE MATERIAL."

F. Accidents

In the event of an accident involving any vehicle transporting licensed material, immediate steps shall be taken to prevent radiation exposure of persons and to control contamination.

G. Exemptions

Specific approval must be obtained from the Atomic Energy Commission for modification of, or exemption from, the requirements of the license condition. Requests for such approval should be directed to the Chief, Isotopes Branch, Division of Materials Licensing, Atomic Energy Commission, and should contain sufficient information to support such a request.

5. The licensee shall process, repackage, and store byproduct, source and special nuclear material only at its facility in Benton County, Washington.
6. Except as specifically provided otherwise by this license, the licensee shall receive, transport, process, repackage, store and dispose of byproduct, source and special nuclear material in accordance with the conditions, limitations, and procedures contained in the application dated October 23, 1963, ^{and base} and amendments thereto dated December 9, 1963, ^{and base} and April 24, 1964, ^{and base} and in the application dated August 18, 1964, ^{also} and amendments thereto dated August 28, 1964, ^{and} and September 18, 1964, ^{and}.
7. The licensee shall not receive any byproduct, source or special nuclear material for storage at the Benton County site until the fencing and other safeguards designed to protect against unauthorized entry have been completed.

The licensee shall not process or repackage any radioactive waste until the structures described in the application have been erected and until radiation safety equipment has been secured and installed.

At such time as the licensee begins to process and repackage waste material, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

8. Amend 2
9. Amend 2
10. Amend 2
11. Amend 3
12. Amend 3

This license shall be effective on the date issued and shall expire two years from the last day of the month in which the license is issued.

FOR THE ATOMIC ENERGY COMMISSION

Dated at Bethesda, Maryland

10 - 26 - 64

BYPRODUCT, SOURCE AND SPECIAL NUCLEAR
MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

LICENSE NO. 13-10042-1

AMENDMENT NO. 2

att. 9-10-65

att. 10-31-66

The Atomic Energy Commission having found that:

- A. The applicant's equipment, facilities and procedures are adequate to protect health and minimize danger to life or property.
- B. The applicant is qualified by training and experience to conduct the proposed land burial operation in such manner as to protect health and minimize danger to life or property.
- C. The application dated August 18, 1964, and amendments thereto dated August 28, 1964, September 18, 1964, and February 3, 1965, comply with the requirements of the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, and is for a purpose authorized by that act, and
encl. #1
encl. #1
att.
- D. The issuance of the amendment to the license authorizing the burial of radioactive wastes at the proposed site will not be inimical to the common defense and security or the health and safety of the public.

License No. 13-10042-1 is amended as follows:

The following conditions are added:

- 8. Byproduct, source, and special nuclear material may be disposed of by burial at a site located in the southeast corner of Section 9, Township 12, North

Range 26, EWM, Benton County, Washington, in accordance with procedures and limitations set forth in the application dated August 18, 1964, and amendments thereto dated August 23, 1964, September 18, 1964, and February 3, 1965.

9. The licensee shall dispose of byproduct, source, and special nuclear material within six months from the date of receipt.
10. Should any water sample obtained from the test well reveal an increase in the concentrations of radioactive material determined prior to commencement of burial operations, the licensee shall perform further surveys to determine whether or not the increase is due to the land burial operations. Should the radioactivity be determined to originate in the burial ground, the licensee shall notify the Director, Division of Materials Licensing within thirty (30) days of such findings.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Dated at Bethesda, Maryland

SEP 10 1964

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 3

*eff 2-3-66
exp. 10-21-66*

(3)

The Atomic Energy Commission having found that:

- A. The applicant's equipment, facilities and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to use the material for the purpose requested in accordance with the regulations in Title 10, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life or property.
- C. The application dated October ^{acted} 14, 1964, and amendment thereto dated November ^{acted} 24, 1965, comply with the requirements of the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, and is for a purpose authorized by that act, and
- D. Issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended as follows:

Condition 1. is amended to read:

- 1. The licensee shall not possess at any one time more than:
 - A. 50,000 curies of byproduct material.

B. 4,000 pounds of source material.

C. 5,000 grams of special nuclear material in accordance with the following:

- (a) No single package shall contain more than 100 grams of Uranium 235 or 60 grams of Uranium 233 or 60 grams of Plutonium or any combination thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity. Unity shall be determined by the following formula:

$$\frac{\text{grams contained U235}}{100} + \frac{\text{grams contained U233}}{60} + \frac{\text{grams contained Pu}}{60} = 1$$

- (b) No single package shall contain more than 15 grams of any combined Uranium 235, Uranium 233, and Plutonium per cubic foot of total volume.

The following conditions are added:

11. Each accumulation of packages shall contain not more than 500 grams of Uranium 235 or 300 grams of Uranium 233 or 300 grams of Plutonium or combinations thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity, as determined by the following formula:

$$\frac{\text{grams contained U235}}{500} + \frac{\text{grams contained U233}}{300} + \frac{\text{grams contained Pu}}{300} = 1$$

and shall be stored at least 12 feet from any other packages containing special nuclear material.

12. The licensee shall bury any accumulation of packages containing special nuclear material as specified in Condition 11. of this license so that there is a

minimum of eight inches of earth in all directions from any other packages containing special nuclear material.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
W. A. McBride
Director
Division of Materials Licensing

Date of Issuance

FEB 3 1966

BYPRODUCT, SOURCE AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 4

442 10-31-66

License No. 13-10042-1 is amended as follows:

Condition 2. is amended to read:

2. Operations shall be conducted by J. Stewart Corbett, Radiation Protection Officer; Frederick P. Bierle; William D. Johnson; or individuals designated by the licensee's Radiation Protection Officer upon satisfactory completion of the training program described in the application.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Date of Issuance

MAY 28 1966

14

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 5

3/1 8-3-66

6/1 8-31-66

The Atomic Energy Commission having found that:

- A. The licensee's equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to use the material for the purpose requested in accordance with the regulations in Title 10, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life and property.
- C. The application dated March 31, 1966, *att'd* complies with the requirements of the Atomic Energy Act of 1954, as amended, and is for a purpose authorized by that Act.
- D. Issuance of the amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended in its entirety to read as follows:

Pursuant to the Atomic Energy Act of 1954, as amended; 10 CFR 30, "Rules of General Applicability to Licensing of Byproduct Material"; 10 CFR 40, "Licensing of Source Material"; 10 CFR 70, "Special Nuclear Material"; a license is hereby

issued to California Nuclear, Inc., 2323 South Ninth Street, Lafayette, Indiana, 47905, to receive and possess waste byproduct and source material in any state of the United States except in "Agreement States" as defined in Section 150.3(b), 10 CFR 150; to receive and possess special nuclear material in any state of the United States; to receive, possess, process, repackage, store, and to dispose by burial in the soil, waste byproduct, source, and special nuclear material at a facility located in Benton County, Washington; and to receive, possess, and store waste byproduct, source, and special nuclear material at a facility located in Lockport Township, Will County, Illinois.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to the provisions of 10 CFR 20, "Standards for Protection Against Radiation," all other applicable rules, regulations, orders of the Atomic Energy Commission now or hereafter in effect, and to the following conditions:

1. The licensee shall not possess at any one time at each of its facilities located in Benton County, Washington, and Will County, Illinois, more than:
 - A. 50,000 curies of byproduct material
 - B. 4,000 pounds of source material
 - C. 5,000 grams of special nuclear material in accordance with the following:
 - (a) No single package shall contain more than 100 grams of Uranium 235 or 60 grams of Uranium 233 or 60 grams of Plutonium or any combination thereof such that the sum of the ratios of the quantity

of each special nuclear material to the quantities specified herein does not exceed unity. Unity shall be determined by the following formula:

$$\frac{\text{grams contained U235}}{100} + \frac{\text{grams contained U233}}{60} + \frac{\text{grams contained Pu}}{60} \leq 1$$

(b) No single package shall contain more than 15 grams of any combined Uranium 235, Uranium 233, and Plutonium per cubic foot of total volume.

2. Each accumulation of packages shall contain not more than 500 grams of Uranium 235 or 300 grams of Uranium 233 or 300 grams of Plutonium or combinations thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity, as determined by the following formula:

$$\frac{\text{grams contained U235}}{500} + \frac{\text{grams contained U233}}{300} + \frac{\text{grams contained Pu}}{300} \leq 1$$

and shall be stored at least 12 feet from any other packages containing special nuclear material.

3. Except as specifically provided otherwise by this license, the licensee shall receive, possess, process, repackage, store, and dispose of byproduct, source, and special nuclear material in accordance with the radiological safety procedures and limitations contained in the application dated October 23, 1963, ^{encl #1} and amendments thereto dated December 9, 1963; April 21, 1964; August 18, 1964; ^{encl #1} August 28, 1964; September 18, 1964; October 12, 1964; February 3, 1965; ^{encl #3} ^{encl #2}

encl # 3
November 24, 1965; and *add* March 31, 1966 (hereafter collectively referred to as the "application").

4. Operations shall be conducted by William D. Johnson, Radiation Protection Officer, Frederick P. Beierle, and other individuals designated by the licensee's Radiation Protection Officer upon satisfactory completion of the licensee's training program.
5. A copy of the "Radiological Physics Safety Manual for Atomic Energy Commission Operations" dated April 21, 1964, *encl* shall be supplied to each employee engaged in operations under this license.
6. The transportation of AEC-licensed material shall be subject to all applicable regulations of the Interstate Commerce Commission, United States Coast Guard, Federal Aviation Agency, and other agencies of the United States having jurisdiction.

When Interstate Commerce Commission regulations are not applicable to shipments by land of AEC-licensed material by reason of the fact that the transportation does not occur in interstate or foreign commerce, (1) the transportation shall be in accordance with the requirements relating to packaging of radioactive material, marking and labeling of the package, placarding of the transportation vehicle, and accident reporting set forth in the regulations of the Interstate Commerce Commission in § 73.391 - 73.395, 49 CFR Part 73, "Regulations Applying to Shippers", and § 77.823, 77.860 (c) and (d), 49 CFR Part 77, "Regulations Applying to Shipments Made By Way of Common, Contract, Or Private Carriers By Public Highways", and

(2) any requests for modifications or exceptions to those requirements, any request for special approvals referred to in those requirements, and any notifications referred to in those requirements shall be filed with, or made to, the Atomic Energy Commission.

7. The licensee may process and repackage byproduct, source, and special nuclear material only at its facility in Benton County, Washington.
8. The licensee shall not process or repackage any radioactive waste until the structures described in the application have been erected and until radiation safety equipment has been secured and installed.

At such time as the licensee begins to process and repackage waste material, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

9. The licensee shall not store any package at its facility in Benton County, Washington, for more than six months from date of receipt.
10. Byproduct, source, and special nuclear material may be disposed of by burial at a site located in the southeast corner of Section 9, Township 12, North Range 26, EMW, Benton County, Washington, in accordance with procedures and limitations set forth in the application dated August 18, 1964, and amendments thereto dated August 28, 1964; September 18, 1964; and February 3, 1965.

11. The licensee shall bury any accumulation of packages containing special nuclear material in the quantities specified in Condition 2 of this license in such a manner as to have a minimum of eight inches of earth in all directions from any other packages containing special nuclear material.
12. Should any water sample obtained from the test well reveal an increase in the concentrations of radioactive material determined prior to commencement of the burial operations, the licensee shall perform further surveys to determine whether or not the increase is due to the land burial operations. Should the radioactivity be determined to originate in the burial ground, the licensee shall notify the Director, Division of Materials Licensing within thirty (30) days of such findings.
13. The licensee shall not open any packages at its facility in Lockport Township, Will County, Illinois, except to repair or repackage containers damaged in transit.
14. The licensee shall not store any package at its facility in Lockport Township, Will County, Illinois, for more than one year from date of receipt.
15. The licensee shall not receive any byproduct, source, or special nuclear material at the Lockport Township, Will County site until the building,

fencing, and other safeguards designed to protect against unauthorized entry have been completed.

At such time as the licensee begins to store packages, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

This license shall expire two (2) years from the last day of the month in which this license is issued.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McEndo

Director
Division of Materials Licensing

Date of Issuance:

AUG 3 1955

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 6

*all 11-7-66
Sept 28 1966*

The Atomic Energy Commission having found that:

- A. The licensee's equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to use the material for the purpose requested in accordance with the regulations in Title 10, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life or property.
- C. The application for license amendment dated September 26, 1966, as amended *added* September 29, 1966, and October 25, 1966, and the application for license amendment dated October 19, 1966, *added* comply with the requirements of the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, and is for a purpose authorized by that Act. (6)

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended to add the following conditions:

- 16. The licensee is authorized to receive at the Commonwealth Edison Company Dresden Nuclear Power Station, Morris, Illinois, approximately 2,000 curies of byproduct material contained in about 5,000 cubic feet of resin and to

package the resins in concrete tanks. The licensee shall receive, package, and store the resins in accordance with the radiological safety procedures and limitations specified in Condition 3. of this license and the application for license amendment dated September 26, 1966, ^{also} as amended September 29, 1966, ^{also} and October 25, 1966.

17. The licensee is authorized to receive and bury at its facility located in Hanford, Washington, packages containing tritium gas in accordance with the application for license amendment dated October 19, 1966, ^{also}

FOR THE ATOMIC ENERGY COMMISSION

Director
Division of Materials Licensing

Date of Issuance:

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 7

Att. 12-7-66
Att. 3-31-62

The Atomic Energy Commission having found that:

- A. The licensee's equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to use the material for the purpose requested in accordance with the regulations in Title 10, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life and property.
- C. The application for license amendment dated August 16, 1966, as amended *att'd* August 31, 1966; September 9, 1966; September 14, 1966; and October 3, 1966, *att'd* complies with the requirements of the Atomic Energy Act of 1954, as amended, and is for a purpose authorized by that Act.
- D. Issuance of the amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended in its entirety to read as follows:

Pursuant to the Atomic Energy Act of 1954, as amended; 10 CFR 30, "Rules of General Applicability to Licensing of Byproduct Material"; 10 CFR 40, "Licensing

of Source Material"; 10 CFR 70, "Special Nuclear Material"; a license is hereby issued to California Nuclear, Inc., 2323 South Ninth Street, Lafayette, Indiana, 47905, to receive and possess waste byproduct and source material in any state of the United States except in "Agreement States" as defined in Section 150.3(b), 10 CFR 150; to receive and possess special nuclear material in any state of the United States; to receive, possess, process, repackage, store, and to dispose by burial in the soil, waste byproduct, source, and special nuclear material at a facility located in Benton County, Washington; to receive, possess, and store waste byproduct, source, and special nuclear material at a facility located in Lockport Township, Will County, Illinois; and to receive, possess, process, repackage, and store waste byproduct, source, and special nuclear material at a facility located in Bureau County, Illinois.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to the provisions of 10 CFR 20, "Standards for Protection Against Radiation," all other applicable rules, regulations, orders of the Atomic Energy Commission now or hereafter in effect, and to the following conditions:

1. The licensee shall not possess at any one time at each of its facilities located in Benton County, Washington; Will County, Illinois; and Bureau County, Illinois, more than:
 - A. 50,000 curies of byproduct material
 - B. 4,000 pounds of source material
 - C. 5,000 grams of special nuclear material in accordance with the following:

- (a) No single package shall contain more than 100 grams of Uranium 235 or 60 grams of Uranium 233 or 60 grams of Plutonium or any combination thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity. Unity shall be determined by the following formula:

$$\frac{\text{grams contained U235}}{100} + \frac{\text{grams contained U233}}{60} + \frac{\text{grams contained Pu}}{60} \leq 1$$

- (b) No single package shall contain more than 15 grams of any combined Uranium 235, Uranium 233, and Plutonium per cubic foot of total volume.

2. Each accumulation of packages shall contain not more than 500 grams of Uranium 235 or 300 grams of Uranium 233 or 300 grams of Plutonium or combinations thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity, as determined by the following formula:

$$\frac{\text{grams contained U235}}{500} + \frac{\text{grams contained U233}}{300} + \frac{\text{grams contained Pu}}{300} \leq 1$$

and shall be stored at least 12 feet from any other packages containing special nuclear material.

3. Except as specifically provided otherwise by this license, the licensee shall receive, possess, process, repackage, store, and dispose of byproduct, source, and special nuclear material in accordance with the radiological safety procedures and limitations contained in the application dated October 23, 1963, as amended December 9, 1963; April 21, 1964; August 18, 1964; August 28, 1964; September 18, 1964; October 12, 1964; February 3, 1965; November 24, 1965; and

encl #5
March 31, 1966; and in the application dated August 16, 1966, as amended *add*
add August 31, 1966; September 9, 1966; September 14, 1966; and October 3, 1966 *add*
(hereafter collectively referred to as the "application").

4. Operations shall be conducted by William D. Johnson, Radiation Protection Officer, Frederick P. Beierle, and other individuals designated by the licensee's Radiation Protection Officer upon satisfactory completion of the licensee's training program. *encl*
5. A copy of the "Radiological Physics Safety Manual for Atomic Energy Commission Operations" dated April 21, 1964, shall be supplied to each employee engaged in operations under this license.
6. The transportation of AEC-licensed material shall be subject to all applicable regulations of the Interstate Commerce Commission, United States Coast Guard, Federal Aviation Agency, and other agencies of the United States having jurisdiction.

When Interstate Commerce Commission regulations are not applicable to shipments by land of AEC-licensed material by reason of the fact that the transportation does not occur in interstate or foreign commerce, (1) the transportation shall be in accordance with the requirements relating to packaging of radioactive material, marking and labeling of the package, placarding of the transportation vehicle, and accident reporting set forth in the regulations of the Interstate Commerce Commission in § 73.391 - 73.395, 49 CFR Part 73, "Regulations Applying to Shippers," and § 77.823, 77.860 (c) and (d), 49 CFR Part 77, "Regulations Applying to Shipments Made

By Way of Common, Contract, Or Private Carriers By Public Highways," and (2) any requests for modifications or exceptions to those requirements, any request for special approvals referred to in those requirements, and any notifications referred to in those requirements shall be filed with, or made to, the Atomic Energy Commission.

7. The licensee may process and repackage byproduct, source, and special nuclear material only at its facilities in Benton County, Washington, and Bureau County, Illinois.

8. The licensee shall not process or repackage any radioactive waste at its facilities in Benton County, Washington, and/or Bureau County, Illinois, until the structures described in the application have been erected and until radiation safety equipment has been secured and installed.

At such time as the licensee begins to process and repackage waste material, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

9. The licensee shall not store any package at its facilities in Benton County, Washington, and Bureau County, Illinois, for more than six months from date of receipt.

10. Byproduct, source, and special nuclear material may be disposed of by burial at a site located in the southeast corner of Section 9, Township 12, North Range 26, EMW, Benton County, Washington, in accordance with procedures and limitations set forth in the application dated August 18, 1964, and amendments thereto dated August 28, 1964; September 18, 1964; and February 3, 1965.

11. The licensee shall bury any accumulation of packages containing special nuclear material in the quantities specified in Condition 2 of this license in such a manner as to have a minimum of eight inches of earth in all directions from any other packages containing special nuclear material.
12. Should any water sample obtained from the test well reveal an increase in the concentrations of radioactive material determined prior to commencement of the burial operations, the licensee shall perform further surveys to determine whether or not the increase is due to the land burial operations. Should the radioactivity be determined to originate in the burial ground, the licensee shall notify the Director, Division of Materials Licensing, within thirty (30) days of such findings.
13. The licensee shall not open any packages at its facility in Lockport Township, Will County, Illinois, except to repair or repackage containers damaged in transit.
14. The licensee shall not store any package at its facility in Lockport Township, Will County, Illinois, for more than one year from date of receipt.
15. The licensee shall not receive any byproduct, source, or special nuclear material at the Lockport Township, Will County site until the building, fencing, and other safeguards designed to protect against unauthorized entry have been completed.

At such time as the licensee begins to store packages, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

16. The licensee is authorized to receive at the Commonwealth Edison Company Dresden Nuclear Power Station, Morris, Illinois, approximately 2,000 curies of byproduct material contained in about 5,000 cubic feet of resin and to package the resins in concrete tanks. The licensee shall receive, package, and store the resins in accordance with the radiological safety procedures and limitations specified in Condition 3. of this license and the application for license amendment dated September 26, 1966, as amended September 29, 1966, and October 25, 1966. *add*
17. The licensee is authorized to receive and bury at its facility located in Hanford, Washington, packages containing tritium gas in accordance with the application for license amendment dated October 19, 1966. *add*

This license shall expire August 31, 1968. *add*

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Date of Issuance

DEC 2 1966

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

CALIFORNIA NUCLEAR, INC.

Sheffield, Ill.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 8

The Atomic Energy Commission having found that:

- A. The licensee's equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to use the material for the purpose requested in accordance with the regulations in Title 10, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life and property.
- C. The application for license amendment dated March 7, 1967, complies with the requirements of the Atomic Energy Act of 1954, as amended, and is for a purpose authorized by that Act.
- D. Issuance of the amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended in its entirety to read as follows:

Pursuant to the Atomic Energy Act of 1954, as amended; 10 CFR 30, "Rules of General Applicability to Licensing of Byproduct Material",

MAY 4 1967

10 CFR 40, "Licensing of Source Material"; 10 CFR 70, "Special Nuclear Material"; a license is hereby issued to California Nuclear, Inc., 2323 South Ninth Street, Lafayette, Indiana, 47905, to receive and possess waste byproduct and source material in any state of the United States except in "Agreement States" as defined in Section 150.3(b), 10 CFR 150; to receive and possess special nuclear material in any state of the United States; to receive, possess, process, repackage, store, and to dispose by burial in the soil, waste special nuclear material at a facility located in Benton County, Washington; to receive, possess, and store waste byproduct, source, and special nuclear material at a facility located in Lockport Township, Will County, Illinois; and to receive, possess, process, repackage, and store waste byproduct, source, and special nuclear material at a facility located in Bureau County, Illinois.

This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to the provisions of 10 CFR 20, "Standards for Protection Against Radiation," all other applicable rules, regulations, orders of the Atomic Energy Commission now or hereafter in effect, and to the following conditions:

1. The licensee shall not possess at any one time at each of its facilities located in Will County, Illinois, and Bureau County, Illinois, more than:

- A. 50,000 curies of byproduct material
- B. 40,000 pounds of source material
- C. 5,000 grams of special nuclear material in accordance with the following:

(a) No single package shall contain more than 100 grams of uranium 235 or 60 grams of uranium 233 or 60 grams of plutonium or any combination thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity. Unity shall be determined by the following formula:

$$\frac{\text{grams contained U235}}{100} + \frac{\text{grams contained U233}}{60} + \frac{\text{grams contained Pu}}{60} \leq 1$$

(b) No single package shall contain more than 15 grams of any combined uranium 235, uranium 233, and plutonium per cubic foot of total volume.

2. The licensee shall not possess at its facility located in Benton County, Washington, more than 5,000 grams of special nuclear material in accordance with the following:

(a) No single package shall contain more than 100 grams of uranium 235 or 60 grams of uranium 233 or 60 grams of plutonium or any combination thereof such that the sum of the ratios of the quantity of each special nuclear material

to the quantities specified herein does not exceed unity.

Unity shall be determined by the following formula:

$$\frac{\text{grams contained U235}}{100} + \frac{\text{grams contained U233}}{60} + \frac{\text{grams contained Pu}}{60} \leq 1$$

(b) No single package shall contain more than 15 grams of any combined uranium 235, uranium 233, and plutonium per cubic foot of total volume.

3. Each accumulation of packages shall contain not more than 500 grams of uranium 235 or 300 grams of uranium 233 or 300 grams of plutonium or combinations thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity, as determined by the following formula:

$$\frac{\text{grams contained U235}}{500} + \frac{\text{grams contained U233}}{300} + \frac{\text{grams contained Pu}}{300} \leq 1$$

and shall be stored at least 12 feet from any other packages containing special nuclear material.

4. Except as specifically provided otherwise by this license, the licensee shall receive, possess, process, repackage, store, and dispose of by-product, source, and special nuclear material in accordance with the radiological safety procedures and limitations contained in the application dated October 23, 1963, as amended December 9, 1963; *encl*
April 21, 1964; August 18, 1964; August 28, 1964; September 18, 1964;

encl

encl

encl

encl

October 12, 1964; February 3, 1965; November 24, 1965; and March 31, 1966; and in the application dated August 16, 1966, as amended August 31, 1966; September 9, 1966; September 14, 1966; October 3, 1966; and March 7, 1967 (hereafter collectively referred to as the "application").

5. Operations shall be conducted by William D. Johnson, Radiation Protection Officer, Frederick P. Beierle, and other individuals designated by the licensee's Radiation Protection Officer upon satisfactory completion of the licensee's training program.
6. A copy of the "Radiological Physics Safety Manual for Atomic Energy Commission Operations" dated August 25, 1966, shall be supplied to each employee engaged in operations under this license.
7. The transportation of AEC-licensed material shall be subject to all applicable regulations of the Department of Transportation and other agencies of the United States having jurisdiction.

When Department of Transportation regulations are not applicable to shipments by land of AEC-licensed material by reason of the fact that the transportation does not occur in interstate or foreign commerce, (1) the transportation shall be in accordance with the requirements relating to packaging of radioactive material, marking and labeling of the package, placarding of the transportation vehicle, and accident reporting set forth in the regulations of the Department

of Transportation in §§ 173.391 - 173.395, 49 CFR Part 173, "Regulations Applying to Shippers," and §§ 177.823, 177.860 (c) and (d), 49 CFR Part 177, "Regulations Applying to Shipments Made By Way of Common, Contract, Or Private Carriers By Public Highways," and (2) any requests for modifications or exceptions to those requirements, any request for special approvals referred to in those requirements, and any notifications referred to in those requirements shall be filed with, or made to, the Atomic Energy Commission.

8. A. The licensee may process and repackage byproduct, source, and special nuclear material at its facility located in Bureau County, Illinois.

B. The licensee may process and repackage special nuclear material at its facility located in Benton County, Washington.
9. The licensee shall not process or repackage any radioactive waste at its facilities in Benton County, Washington, and/or Bureau County, Illinois, until the structures described in the application have been erected and until radiation safety equipment has been secured and installed.

At such time as the licensee begins to process and repackage waste material, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

10. The licensee shall not store any package containing licensed material at its facilities in Benton County, Washington, and Bureau County, Illinois, for more than six months from date of receipt.
11. Special nuclear material may be disposed of by burial at a site located in the southeast corner of Section 9, Township 12, North Range 26 EMW, Benton County, Washington, in accordance with procedures and limitations set forth in the application dated August 18, 1964, and amendments thereto dated August 28, 1964; September 18, 1964; and February 3, 1965.
12. The licensee shall bury any accumulation of packages containing special nuclear material in the quantities specified in Condition 3 of this license in such a manner as to have a minimum of eight inches of earth in all directions from any other packages containing special nuclear material.
13. Should any water sample obtained from the test well reveal an increase in the concentrations of radioactive material determined prior to commencement of the burial operations, the licensee shall perform further surveys to determine whether or not the increase is due to the land burial operations. Should the radioactivity be determined to originate in the burial ground, the licensee shall notify the Director, Division of Materials Licensing, within thirty (30) days of such findings.

14. The licensee shall not open any packages at its facility in Lockport Township, Will County, Illinois, except to repair or repack containers damaged in transit.
15. The licensee shall not store any package at its facility in Lockport Township, Will County, Illinois, for more than one year from date of receipt.
16. The licensee shall not receive any byproduct, source, or special nuclear material at the Lockport Township, Will County site until the building, fencing, and other safeguards designed to protect against unauthorized entry have been completed.

At such time as the licensee begins to store packages, the licensee shall notify the Chief, Isotopes Branch, Division of Materials Licensing.

17. The licensee is authorized to receive at the Commonwealth Edison Company Dresden Nuclear Power Station, Morris, Illinois, approximately 2,000 curies of byproduct material contained in about 5,000 cubic feet of resin and to package the resins in concrete tanks. The licensee shall receive, package, and store the resins in accordance with the radiological safety procedures and limitations specified in Condition 4. of this license and the application for

license amendment dated September 26, 1966, as amended September 29, *encl*
1966, and October 25, 1966.

This license shall expire August 31, 1968.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Date of Issuance

APR 26 1967

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

AMENDMENT TO BYPRODUCT, SOURCE,
AND SPECIAL NUCLEAR MATERIAL LICENSE

LICENSE NO. 13-10042-1

AMENDMENT NO. 9

The Atomic Energy Commission having found that:

- A. The applicant's equipment, facilities and procedures are adequate to protect health and minimize danger to life or property.
- B. The applicant is qualified by training and experience to conduct the proposed land burial operation in such manner as to protect health and minimize danger to life or property.
- C. The application for license amendment dated August 16, 1966, as amended August 31, 1966, November 18, 1966, February 10, 1967, February 14, 1967, February 27, 1967, and May 10, 1967, complies with the requirements of the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, and is for a purpose authorized by that act.
- D. The issuance of the amendment to the license authorizing the burial of radioactive wastes at the proposed site will not be inimical to the common defense and security or the health and safety of the public.

SEP 5 1967

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended as follows:

The following conditions are added:

18. Byproduct, source, and special nuclear material may be disposed of by burial at a site located in the Southwest Quarter of Section 27, Township 16 North Range 6 East of the Fourth Principal Meridian, Bureau County, Illinois, in accordance with procedures and limitations set forth in the application for license amendment dated August 16, 1966, as amended August 31, 1966, November 18, 1966, February 10, 1967, February 14, 1967, February 27, 1967, and May 10, 1967.
19. The licensee shall not excavate any trench for burial of waste materials at its site specified in Condition 18. of this license which would intercept the water table. The seasonal fluctuation of the water table shall be taken into account in determining the highest likely level of the water table.
20. The mounds over the completed burial trenches at the site specified in Condition 18. of this license shall be maintained to minimize erosion.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Date of Issuance

AUG 1 1967

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39

AMENDMENT TO BYPRODUCT, SOURCE,
AND SPECIAL NUCLEAR MATERIAL LICENSE

D, I

LICENSE NO. 13-10042-1

AMENDMENT NO. 10

The Atomic Energy Commission having found that:

- A. The licensee's equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.
- B. The licensee is qualified by training and experience to conduct the proposed land burial operation in accordance with the Commission's regulations set forth in Title 10, Chapter 1, Code of Federal Regulations, and in such manner as to protect health and minimize danger to life and property.
- C. The application for license amendment dated November 3, 1967, complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and is for a purpose authorized by that Act.

Byproduct, Source, and Special Nuclear Material License No. 13-10042-1 is amended to add the following condition:

21. The licensee is hereby authorized to receive and bury at its facility located in Bureau County, Illinois, one steel bottle containing 50 curies of hydrogen 3 (tritium) gas as specified in the application for license amendment dated November 3, 1967.

Date of Issuance

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
J. P. [illegible]

Director
Division of Materials Licensing

FEB 12 1968

FEB 19 1968

BYPRODUCT, SOURCE AND SPECIAL NUCLEAR MATERIAL LICENSE

NUCLEAR ENGINEERING COMPANY, INC.

DOCKET NO. 27-39

LICENSE NO. 13-10042-1

AMENDMENT NO. 11

#11
Csec
ATTACH
SHEET
FROM CO.

In accordance with application for license amendment received March 5, 1968,

License No. 13-10042-1 is amended as follows:

License No. 13-10042-1 is transferred from California Nuclear, Inc. to Nuclear Engineering Company, Inc. provided, however, that this transfer shall not be effective until notice, in writing, signed by an officer of California Nuclear, Inc. and an officer of Nuclear Engineering Company, Inc., or counsel therefor, has been filed by deposit in the mail addressed to the Director, Division of Materials Licensing, U. S. Atomic Energy Commission, Washington, D. C., 20545, stating that:

- (1) all assets of California Nuclear, Inc. have been transferred to Nuclear Engineering Company, Inc., and
- (2) Nuclear Engineering Company, Inc. has assumed control of and full responsibility for all activities conducted under the license, *See Serial 10042-1*

Upon such notification, all references in the license to "California Nuclear, Inc." shall read "Nuclear Engineering Company, Inc." All other conditions and limitations in the license remain the same.

FOR THE ATOMIC ENERGY COMMISSION

Date of Issuance

MAR 25 1968

Original signed by
J. A. McDermott

Director
Division of Materials Licensing

APR 5 1968

The Commission has determined, pursuant to the provisions of Sections 30.34, 40.46, and 70.36, 10 CFR Parts 30, 40, and 70, respectively, that Nuclear Engineering Company, Inc. is qualified to be the holder of the license and that transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

Within fifteen (15) days from the date of publication of this notice in the Federal Register, any person whose interest may be affected by the issuance of this license amendment may file a petition for leave to intervene. Requests for a hearing and petitions for leave to intervene shall be filed in accordance with the provisions of the Commission's "Rules of Practice" (10 CFR Part 2). If a request for a hearing or a petition for leave to intervene is filed within the time prescribed in this notice, the Commission will issue a notice of hearing or an appropriate order. Petitions to intervene or requests for public hearings may be filed with the Secretary, U. S. Atomic Energy Commission, Washington, D. C., 20545.

A copy of the application for transfer of the license is on file in Docket No. 27-39 in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C.

FOR THE ATOMIC ENERGY COMMISSION

Dated at Bethesda, Maryland

MAR 25 1968

Original Signed By
J. A. McLaughlin

Director
Division of Materials Licensing

UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 27-39

NOTICE OF TRANSFER OF LICENSE NO. 13-10042-1 FROM

CALIFORNIA NUCLEAR, INC. TO NUCLEAR ENGINEERING COMPANY, INC.

Please take notice that the Atomic Energy Commission has issued Amendment No. 10 to License No. 13-10042-1, as set forth below, which authorizes the transfer of the license from California Nuclear, Inc. to Nuclear Engineering Company, Inc.

License No. 13-10042-1 authorizes the possession, storage, processing, repackaging, and disposal of waste byproduct, source, and special nuclear material. Nuclear Engineering Company, Inc. will:

- (1) purchase all the physical assets, property, and equipment now owned by California Nuclear, Inc.
- (2) employ the present employees of California Nuclear, Inc.
- (3) conduct its operations at the locations specified in the license and in accordance with its terms and conditions.

The license amendment provides that the transfer will be effective upon receipt by the Commission of a notice, in writing, signed by an officer of California Nuclear, Inc. and an officer of Nuclear Engineering Company, Inc., or counsel therefor, that all assets of California Nuclear, Inc. have been transferred to Nuclear Engineering Company, Inc., and Nuclear Engineering Company, Inc. has assumed control of and full responsibility for all activities conducted under the license.

APR 5 1958

(A) D C

BYPRODUCT, SOURCE, AND SPECIAL NUCLEAR MATERIAL LICENSE

NUCLEAR ENGINEERING COMPANY, INC.

License No. 13-10042-01
Amendment No. 11

In accordance with application dated November 4, 1976, License No. 13-10042-01 is amended as follows:

The following conditions shall apply to operations conducted at the licensee's Bureau County site and supersede all other conditions in this license which contain references to the Bureau County site.

1. The licensee shall not possess at any one time more than:
 - A. 50,000 curies of byproduct material.
 - B. 18,200 kilograms of source material.
 - C. Plutonium in concentrations greater than 10 nanocuries per gram.
 - D. 5,000 grams of special nuclear material in accordance with the following:
 - a. No single package shall contain more than 100 grams of uranium 235 or 60 grams of uranium 233 or any combination thereof such that the sum of the ratios of the quantity of each special nuclear material to the quantities specified herein does not exceed unity. Unity shall be determined by the following formula:
$$\frac{\text{grams contained uranium 235}}{100} + \frac{\text{grams contained uranium 233}}{60} \leq 1$$
 - b. No single package shall contain more than 15 grams of any combined uranium 235 and uranium 233 per cubic foot of total volume.
2. *Stoffly* Byproduct, source, and special nuclear material may be disposed of by burial only in Trenches 14 and 14A, as identified in application dated November 4, 1976, at a site located in the Southwest Quarter of Section 27, Township 16 North, Range 6 East of the Fourth Principal Meridian, Bureau County, Illinois.

JUN 28 1977

3. Operations shall be conducted by persons specified in the "Site Operations Manual for Low-Level Rad-Waste Disposal at Sheffield, Illinois" submitted with application dated November 4, 1976.
4. The licensee shall not bury any transuranic radioactive waste (waste containing radionuclides with atomic number greater than 92) in concentrations greater than 10 nanocuries per gram.
5. The licensee may bury liquid radioactive waste contained in scintillation vials in accordance with procedures in the application dated November 4, 1976.
6. The licensee shall not open any package containing special nuclear material.
7. The licensee shall not bury any liquid radioactive waste except as specified in Condition 5.
8. Except as provided otherwise in the conditions of this license amendment, the licensee shall conduct operations in accordance with application dated November 4, 1976, as amended November 18, 1976 and December 10, 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Bernard Singer, Chief
Radioisotopes Licensing Branch
Division of Fuel Cycle and
Material Safety

Date of License

JAN 6 1977

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AUG 12 1981

ATTORNEY GENERAL

LEASE

This Lease, dated October 3, 1966, and entered into pursuant to the "Radioactive Wastes Act" of the State of Illinois, approved August 16, 1963, is between the State of Illinois, acting through the Department of Public Health, lessor (hereinafter called the "State"), and California Nuclear, Inc., a corporation chartered under the laws of the State of California, and licensed to do business in Illinois, Certificate Number 136, State of Illinois, Office of the Secretary of State, dated 3 February 1965, and recorded in Book 950, pages 675-680, lessee (hereinafter called the "Corporation").

Recitals

The State, by and through the Department of Public Health, has determined that a facility for the concentration and storage of radioactive waste should be opened in the State of Illinois to assist in the development of the peaceful benefits of nuclear energy in the State of Illinois.

The Corporation has procured and caused to be conveyed to the State the real estate described in the addenda which is affixed to this Lease, marked Exhibit A and made a part hereof, which real estate is hereafter referred to as the "Site."

ARTICLE I

The Premises

The State, in consideration of the rents, covenants, conditions, warranties and agreements herein assumed by the Corporation, hereby leases the Site to the Corporation.

ARTICLE II

Relationship Between the Parties

1. The Corporation agrees that this Lease shall not be assigned without the State's written consent, except that it may be assigned to a wholly owned subsidiary of the Corporation organized under the laws of the

-60-

...of the State, and agrees that it will use the leased premises for a business loan.

2. The Corporation agrees that it shall not, without the written consent of the State, sublet the premises or any part thereof or permit the use of the premises by any party other than the Corporation or a wholly owned subsidiary of the Corporation organized under the Laws of the State of Illinois.

ARTICLE III

Term

The term of this Lease shall be ninety-nine years commencing at midnight on October 2, 1966 unless sooner terminated in accordance with the terms of this Lease.

ARTICLE IV

Payment of Rent

The Corporation shall pay to the State as rent for the premises and related rights obtained under this Lease the sum of fifty dollars for each annual period during the term of this Lease, the first annual payment being due and payable on the execution of this Lease, receipt of which is hereby acknowledged, and succeeding payments to be payable annually within ten days after the anniversary date of this Lease. All rental payments shall be payable in lawful money of the United States at the principal office of the Illinois Department of Public Health, Springfield, Illinois, or as otherwise designated in writing by the State.

ARTICLE V

Use of Premises and Operation of Site

✓ The Corporation covenants and agrees that it will use the leased premises in all respects in accordance with the "Criteria For a Site in Illinois For the Concentration and Storage of Radioactive Wastes" dated March, 1965, affixed to this Lease marked Exhibit "B" and made a part hereof, and also in accordance with the proposal of the Corporation to the State dated June 14, 1965 and received by the State on June 14, 1965, a copy of which is affixed to this Lease, marked Exhibit "C" and made a part hereof. It is expressly understood that the Corporation shall comply with all requirements of the Atomic Energy Commission and applicable Illinois laws and rules as the same are promulgated and amended from time to time.

Access of State

The State or any person authorized by it, shall at all times have access to the leased premises for all reasonable purposes, including, without limitation, the protection of the health and safety of the public or of the employees or personnel or contractors of the State, for taking readings and samples to facilitate research, for taking readings or samples to gain information needed for the State's promotion of nuclear industrial development and for inspecting the premises and determining if the Corporation is complying with the obligations imposed by this Lease.

ARTICLE VII

Perpetual Maintenance Fund

The Corporation understands that the storage and burial of radioactive waste requires perpetual surveillance and maintenance, and so long as it occupies the premises, the Corporation will undertake all surveillance and maintenance as described in Exhibit "B" and as required by all applicable laws, regulations, or licensing for the protection of the public health and safety. The Corporation further understands that if for any reason at any time the Corporation should default or fail to comply with the terms of its license, or for any reason withdraw from the premises, the State would be required to assume surveillance and maintenance obligations and pay the surveillance and maintenance costs.

The Corporation therefore covenants and agrees to pay to the State annually the sum of five cents for each cubic foot of radioactive waste for which burial or storage charges have been made during the preceding year. In order for the State to determine the proper payments of the Corporation, the State shall have access to and the right to examine any directly pertinent books, documents, papers, accounts and records of the Corporation involving operations on the leased premises. Said right shall continue for three years after the termination of this Lease.

ARTICLE VIII

Termination of Lease

The Corporation will not, without the State's consent, violate any of the terms or conditions of this Lease or violate the terms of authorizing licenses issued by the Atomic Energy Commission or other appropriate authority, or use any part of the leased premises in a manner not in compliance with the covenants and purposes of this Lease, or fail to comply with any applicable laws, regulations, and ordinances of the United States and the State of Illinois. If such violation, misuse or noncompliance occurs, the State shall have a right, upon giving the Corporation sixty days written notice, to terminate this Lease and re-enter and take possession of the premises.

ARTICLE IX

Non-Waiver

The Corporation agrees that the State's failure to insist upon the strict performance of any provision of this Lease or to exercise any right based upon a breach thereof, or the acceptance by the State of any rent during such breach, shall not waive any of the State's rights under this Lease.

ARTICLE X

Notices

Any notices, demands, requests, consents, approvals, and other communications which may or are required to be given by either party to the other under this Lease shall be in writing and shall be deemed to have been sufficiently given for all purposes when delivered or mailed by certified mail, postage prepaid.

1. Notice to the State shall be given by mailing to Illinois Department of Public Health, New State Office Building, Springfield, Illinois 62706.

2. Notice to the Corporation shall be given by mailing to California Nuclear, Inc., 2323 South 9th Street, Lafayette, Indiana 47905.

IN WITNESS WHEREOF, the parties hereto have executed this
Lease in several counterparts.

STATE OF ILLINOIS

BY Franklin D. Yocum
Franklin D. Yocum, M.D., Director

BY _____

CALIFORNIA NUCLEAR, INC.

BY Howard K. ...
President

ASSIGNMENT

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AUG 12 1981

ATTORNEY GENERAL

FOR VALUE RECEIVED, the undersigned hereby assigns to
NUCLEAR ENGINEERING COMPANY, INC., a California corporation,
all of its rights, title and interest in and to that certain lease dated
October 3, 1966, as the same may have been heretofore amended, be-
tween the State of Illinois, acting through the Department of Public
Health as lessor and California Nuclear, Inc., as lessee, covering the
premises situated in the County of Bureau, State of Illinois described
as follows:

A part of the SW 1/4 of Section 27, T 16 N, R 6 E, 4th PM,
Bureau County, Illinois, more particularly bounded and de-
scribed as follows:

Commencing at the approximate Southeast corner of the SW
1/4 of said Section 27;

Thence in a Northerly direction, along the East line of the
SW 1/4 of said Section 27, a distance of 938 feet, more or
less;

Thence in a Westerly direction, 200.0 feet, to the Point of
Beginning for the Tract to be described;

Thence in a Northerly direction, 200.0 feet Westerly of and
parallel with the East line of the SW 1/4 of said Section 27, a
distance of 900 feet, more or less;

Thence in a Westerly direction, 400.0 feet Southerly of and
parallel with the possession line fence of the South 66.67
Acres of the E 1/2 or the SW 1/4 of said Section, a distance
of 985 feet, more or less;

Thence in a Southerly direction, 150 feet Easterly of and
parallel with the West line of the E 1/2 of the SW 1/4 of said
Section 27, a distance of 900 feet, more or less;

Thence in an Easterly direction, 985 feet, more or less, to
the Point of Beginning, containing 20.4 Acres, more or less.

This Assignment includes, but is not limited to, any cash deposits
made with the State of Illinois pursuant to said lease.

This Assignment shall become effective immediately upon delivery
subject however to its approval by the State of Illinois.

Dated this 7th day of May, 1963.

CALIFORNIA NUCLEAR, INC.

By Stuart M. Lani
President

ATTEST:

William A. Bennett
Secretary

In order to induce the State of Illinois to consent to the foregoing assignment, and expecting them to rely hereon, the undersigned, NUCLEAR ENGINEERING COMPANY, INC., hereby covenants and agrees, upon acceptance of the foregoing assignment, well and truly to carry out and perform all of the terms, conditions and covenants of the lease to be performed on the part of the lessee.

Dated this 13th day of May, 1968.

NUCLEAR ENGINEERING COMPANY,
INC.

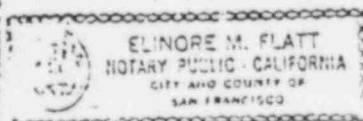
By James L. Harvey
President

ATTEST:

Max H. Margolis
Secretary

STATE OF CALIFORNIA)
City and County of San Francisco) SS:

On this 13th day of May, in the year 1968, before me ELINORE M. FLATT, a notary public for said City, County, and State, personally appeared JAMES L. HARVEY and MAX H. MARGOLIS, known to me to be the President and Secretary, respectively, of the corporation that executed the within instrument, and acknowledged to me that such corporation executed the within instrument pursuant to a resolution of its Board of Directors.



My Commission Expires June 9, 1970

Elinore M. Flatt
NOTARY PUBLIC
In and for the City and County of
San Francisco, State of California

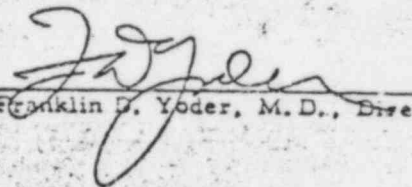
APPROVAL OF ASSIGNMENT

The annexed Assignment of its lease of premises in Bureau County, Illinois, by California Nuclear, Inc., to Nuclear Engineering Company, Inc., is hereby approved; provided that no further assignment or sublease can be made without the prior written approval of the State of Illinois except as expressly authorized by ARTICLE II thereof.

Dated at Springfield, Illinois this day of May, 1968.

STATE OF ILLINOIS

By


Franklin D. Yoder, M.D., Director

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AUG 12 1981

AGREEMENT
ATTORNEY GENERAL

THIS AGREEMENT made and entered into this 29th day of December, 1976, by and between Nuclear Engineering Company, Inc., a California corporation having its principal place of business at 9200 Shelbyville Road, Louisville, Kentucky 40222, hereinafter called "NECO" and the State of Illinois, Department of Public Health, Springfield, Illinois 62761, hereinafter called "State".

WITNESSETH:

WHEREAS, NECO has set forth various proposals to the State through its Department of Public Health and;

WHEREAS, The State has properly considered the aforesaid proposals and determined that existing lease agreement shall be amended.

NOW, THEREFORE, in consideration of the terms, covenants, payments, conditions and restrictions hereinafter set forth, NECO and the State acknowledge and agree as follows:

1. That NECO's sole responsibility in regard to any and all pricing at its Sheffield Illinois facility shall be to advise the State of any future price revisions within sixty (60) days prior to the date of their implementation.

2. That NECO shall pay a perpetual care and maintenance fee to the State in the amount of ten cents (10¢) per cubic foot of radioactive waste disposed at the Sheffield site commencing the 1st day of January, 1977 and terminating on the 31st day of December, 1977.

3. That during the aforesaid one (1) year period
NECO and the State agree to conduct technical studies to
reevaluate the existing conditions at the Sheffield facility.
Subsequent to the completion of the technical studies, should
additional funds, if any, be determined necessary then the
parties agree to renegotiate in good faith the cubic foot
amounts payable by NECO to the State.

4. That NECO and the State acknowledge and agree that the terms
of this Agreement shall amend, supercede and control all previous ^{similar terms of} *John P. H.*
communications, representations or agreements including but
not limited to lease or license agreements their exhibits or
attachments either verbal or written.

5. That this instrument embodies the whole agreement
of the parties. There are no promises, terms, conditions
or obligations other than those contained therein.

Executed this the 29 day of
December, 1976.

NUCLEAR ENGINEERING CO., INC.

Seal _____

By: Phillip H. Myer
(Title) *Vice President*

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

Seal _____

By: John P. H.
(Title) *Assistant Secretary*

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ATTORNEY GENERAL

AMENDMENT TO LEASE AGREEMENT

WHEREAS, under date of October 3, 1966, the State of Illinois acting through the Department of Public Health pursuant to the "Radioactive Waste Act" of the State of Illinois entered into a lease agreement with California Nuclear, Inc. such lease agreement providing for the storage of radioactive waste at a site near Sheffield, Illinois; and,

WHEREAS, under date of May 13, 1968, California Nuclear, Inc. with the approval of the Department of Public Health for the State of Illinois assigned to Nuclear Engineering Company, Inc. a California Corporation, all of its rights, title and interests into said lease; and,

WHEREAS, under date of December 29, 1976, Nuclear Engineering Company, Inc. and the State of Illinois by the Department of Public Health, agreed to an amendment of said lease which declared that:

1. It was Nuclear Engineering's sole responsibility in regard to any and all pricing at the Sheffield facility to advise the State of any price revisions.

2. The perpetual care and maintenance fee paid to the State would be increased to \$.10 per cubic foot of radioactive waste to be disposed of at the Sheffield site, such increase in fee commencing the first day of January, 1977 and terminating on the 31st of December, 1977.

3. During said one year period the State would conduct technical studies and reevaluate conditions to determine the amount necessary to charge per cubic foot of disposed material to provide for the perpetual care and maintenance fund; and,

WHEREAS, the "Radioactive Waste Act" of the State of Illinois, approved August 16, 1963, was amended September 20, 1977 by Public Act 80-838, such amendment authorizing the Director of the Department of Public Health to assess fees, which shall be established at a rate which provides an annual amount equal to the anticipated reasonable cost necessary to maintain, monitor and otherwise supervise and care for lands and facilities as required in the interest of public health and safety on a continuing and perpetual basis; and,

WHEREAS, the State by the Department of Public Health, has determined that a perpetual care and maintenance fee of fifty-five cents (\$.55) per cubic foot of radioactive waste disposed of at the Sheffield site will at this time provide sufficient amounts to provide continuing and perpetual care; and,

WHEREAS, Nuclear Engineering Company, Inc., a California Corporation having its principal place of business at 9200 Shelbyville Road, Louisville, Kentucky 40222, is a wholly owned subsidiary of Teledyne, Inc., a California Corporation having its principal place of business at 1901 Avenue of the Stars, Los Angeles, California, and as a subsidiary in past conferences with the

Department regarding the administration of the provisions of the lease agreement has found it necessary to consult with its parent, Teledyne, the State, by the Department of Public Health, therefore deems Teledyne a necessary party to the lease. By its signature to this lease amendment Teledyne, Inc. ratifies the lease agreement and is responsible as an original party.

NOW, THEREFORE, in consideration of the terms and conditions herein provided and mutual agreements herein recited, it is agreed between Nuclear Engineering Company, Inc. and Teledyne, Inc. hereinafter referred to as NECO and Teledyne, respectively, and the State of Illinois, Department of Public Health, hereinafter referred to as the "State" as follows:

1. As of January 1, 1978 the amendment to the lease agreement entered into December 29, 1976 has been fulfilled by the parties and is now superceded by this amendment and said amendment of December 29, 1976 is declared null and void and of no further force and effect.

2. That NECO's sole responsibility in regard to any and all pricing at its Sheffield, Illinois facility shall be to advise the State of any further price revisions within sixty (60) days prior to the date of their implementation.

3. That NECO or Teledyne shall pay a perpetual care and maintenance fee to the State in the amount of fifty-five cents (\$.55) per cubic foot of waste disposed at the Sheffield site

commencing the first day of January, 1978. Such payments shall be on a quarterly basis and shall be submitted within 15 days of the quarter's end.

4. To determine the anticipated reasonable costs necessary to maintain, monitor, and otherwise supervise and care for the lands and facilities as required in the interest of public health and safety on a continuing and perpetual basis, the State shall evaluate the appropriateness of supporting parameters upon the request of NECO or Teledyne and upon its own initiative at intervals not to exceed two years. Subsequent to the completion of such evaluation, should additional funds, if any, be determined necessary, the State agrees to submit to NECO and Teledyne for review its evaluation and determination, ninety (90) days prior to implementation of such additional fees.

5. Within thirty (30) days after notice by the State of any evaluation and determination to increase or decrease the fees herein provided, NECO or Teledyne, if they disagree with such determination, may request an administrative hearing before the Department pursuant to the provisions of the Illinois Administrative Procedure Act. Any fees increased or decreased as a result of such administrative hearing or judicial review shall be retroactive to the declared implementation date.

6. That this instrument embodies the whole agreement pertaining to the payment of perpetual care and maintenance funds between the parties. There are no promises, terms, conditions, or obligations other than those contained herein.

Executed this _____ day of
_____, 1977.

NUCLEAR ENGINEERING CO., INC.

Seal _____

By: _____
(Title)

TELEDYNE, INC.

Seal _____

By: _____
(Title)

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

Seal _____

By: _____
(Title)

March - 1965

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

CRITERIA FOR A SITE IN ILLINOIS FOR THE CONCENTRATION
AND STORAGE OF RADIOACTIVE WASTES

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH

CRITERIA FOR A SITE IN ILLINOIS FOR THE CONCENTRATION
AND STORAGE OF RADIOACTIVE WASTES

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CRITERIA FOR A SITE IN ILLINOIS FOR THE CONCENTRATION
AND STORAGE OF RADIOACTIVE WASTES

I Purpose

The purpose of these criteria is to provide a basis for submission of proposals by firms interested and qualified in operating a suitable site for the concentration and storage of radioactive wastes in Illinois. These criteria provide for receipt of radioactive materials in any physical form, however they permit only the burial of solid radioactive wastes.

II Scope of the Proposal

These criteria are developed pursuant to the Radioactive Waste Act as approved August, 1963 (Chapter III $\frac{1}{2}$, Section 230 of the Illinois Revised Statutes 1963). The Illinois General Assembly has made no monies available to the Director of Public Health specifically for the furtherance of the Act. The State of Illinois, therefore, is prepared to provide general supervision over the operation of a site proposed by these criteria and operated by a contractor, but no state monies are available for the purchase of lands, buildings, equipment and appurtenances.

Proposal selection shall be by the Director of the Illinois Department of Public Health. Basis for selection will include but will not be limited to technical experience of the contractor and his staff, proposed methods of operation, agreement to purchase suitable land as agreed upon by the contractor and the Director, the facilities to be built at the site, proposed schedule of construction of the necessary facilities, proposed schedule of rates, financial status, and agreement to obtain the necessary U. S. Atomic Energy Commission Licenses. Proposals will not be considered unless all treatment and handling facilities are located on the proposed single site. In addition, the proposal shall include the terms under which the site would be acquired by the contractor, the manner by which the title would be conveyed to the State, and the lease-back fees to be payable to the State.

The proposal shall include a detailed description of the financial responsibility of the contractor, including the name and description of a parent organization wherever applicable, of which it is a subsidiary. The estimated amounts of property and liability insurance to be acquired for protection of the contractor, the State of Illinois, the customers and the general public shall be included. A description of the contractors'

experience in the radioactive waste handling field, including personnel information sheets of the responsible management, technical and supervisory members of its staff, shall be included with the proposal.

The proposal shall include a schedule of charges for treatment and burial of the various types of materials which will be accepted by the contractor at the site.

The proposal shall acknowledge that the contractor is aware of and shall comply with all applicable rules and regulations including those of the U. S. Atomic Energy Commission, the State of Illinois, the Interstate Commerce Commission and others which may become effective from time to time following the award of this contract.

DEFINITIONS

Controlled
Area

Controlled Area - any area at the site in which there exists radiation at such levels that a major portion of the human body could receive in one hour, a dose in excess of 5 millirems or in any 5 consecutive days, a dose in excess of 100 millirems.

Contractor - Person, persons or firms who propose to operate and/or supervise the proposed site.

Department - Department means the Department of Public Health in the State of Illinois.

Director - Director means the Director of the Department of Public Health.

Solid - A state of matter in which the relative motion of the molecules is restricted and they tend to retain a definite fixed position relative to each other, giving rise to crystal structure. A solid may be said to have a definite shape and volume.

Treatment - Treatment as used in these specifications means concentration, solidification, storage and/or other handling techniques performed on radioactive wastes subsequent to receipt and prior to burial.

III Environmental Characteristics of the Proposed Site

The contractor may at his own discretion propose more than one site, but as a separate proposal, for the consideration of the Director. The title to the property proposed shall be conveyed to the State of Illinois prior to receipt, storage or burial of any radioactive materials on said site and shall remain under the ownership of the State of Illinois in perpetuity.

A. Topographical Features:

The burial site should be located on a level to gently rolling area. If natural lakes or surface waters are present on the proposed site, on the adjacent and/or contiguous lands; the contractor shall present evidence that will assure the Director that said bodies of water could not, as a result of normal and/or abnormal operating conditions, receive concentrations of radioactive materials which would constitute a hazard to the health and safety of the neighbors to the site or the general public.

B. Hydrological Features:

The contractor shall include as part of this section, but not to the exclusion of other data it deems applicable, a general and detailed description of the hydrological features of the site. The types and number of aquifers present, the water table variation with seasons, the known velocity of flow in these aquifers and the artesian pressure shall be included in this section. Areas in which the water table is not higher than 20 feet below the ground surface at any time of the year are preferable for burial operations.

C. Geological Features

The geology of the site should be investigated by a series of core drillings to determine the subsurface characteristics, the presence of aquifers and possible presence of faulted geological structures. The soil of the burial areas should be suitable for trench operations, however, in the event it is deemed feasible, alternate methods of storage may be proposed. In such an event, adequate evidence shall be included to substantiate the feasibility of each alternate method. Site shall not be located in a limestone area or where complex faulted geological structures exist, unless it can be shown that a potential ground water hazard will not be created.

D. Population Density

Existing and projected population densities of the immediate and surrounding areas shall be low. The total area of the proposed site or any part thereof shall not be within the corporate limits of any village or city and no village or city shall be within one mile; no village or city exceeding 2,000 population should be within five miles of the controlled area; and no village or city exceeding 25,000 population should be within 10 miles of the controlled area.

E. Transportation Facilities:

Adequate consideration should be given, during selection of the site, to the availability of and proximity to railway, highway and waterway transportation services.

IV Operation Procedures and Limitations

A. Personnel Requirements

✓ | All operations of the facility shall be under the supervision of a qualified individual who is knowledgeable in the field of ionizing radiation, its detection and biological effect. Qualification of supervisory personnel will be determined by the Director. Sufficient numbers of qualified personnel of the various technical and operating specialties necessary to safely operate the facility must be available to provide for vacations, illness and shift coverage. All personnel performing work involving the use, handling, treatment, storage and burial of radioactive materials shall receive instructions in the nature of ionizing radiation, its detection and biological effects, in addition to training in the various operating procedures required for safe performance of the work. Personnel information sheets shall be submitted for all responsible supervising personnel,

B. Instrument and Personnel Monitoring Requirements

✓ | A list of radiation instruments which shall be used by operating personnel including the make, model number, and range of such instruments shall be provided. The method and frequency of calibration shall also be stated. The minimum requirement for an array of instruments to be available shall provide the capability of measuring Beta and Gamma radiation with at least a reliable range of from background to 500 r/hr and an alpha measuring instrument(s) with a capability of detecting alpha radiation with at least a reliable range of 50 to 50,000 disintegrations per minute per 100 square centimeters (dpm/100 cm²).

Qualified individual shall be one who is suited by training and experience to supervise the personnel operation. Should have college training in the sciences and experience in the handling of radioactive material.

Personal monitoring shall be provided for all personnel on the site. A minimum of ALN badge monitoring and two ionization chambers (pocket dosimeters) with ranges of 0 to 200 milliroentgens and 0 to 200 roentgens shall be provided for each person on the controlled area of the site.

C. Material to be Accepted:

- ✓ 1. All radioactive materials in any physical form,
will be accepted although only solid radioactive materials will be permitted to be buried. Liquid and semi-solid materials must be converted to solid form before burial. Proposal shall include measures for receipt and treatment of radioactive gases.
- ✓ 2. Activity of radioactive material should not normally exceed 1 (one) curie per cubic foot of volume of the entire container at the time of burial. Quantities of radioactive materials in excess of 1 (one) curie per cubic foot may be accepted provided prior approval of the Director has been obtained.
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(2)(a) 4. 3. Source and special nuclear materials in quantities not sufficient
to form a critical mass or when packaged in such containers as will preclude the assembly of a critical mass will be accepted.
Containers to be accepted: All containers that are approved by the Interstate Commerce Commission for the shipment of radioactive materials, including wooden and steel drums, steel and lead casks, and concrete coffins, shall be acceptable.
5. No materials shall be accepted that will create hazards of an explosive or pyrophoric nature.

5. Each load and container shall be monitored at the site and shall meet the following requirements at time of receipt.

3 ~~to be~~

- a. Maximum of 200 mrem/hr at any surface of the container.
- b. Maximum 10 mrem/hr at one meter (or 3 feet) from any surface of the container.
- c. Less than 500 disintegrations per minute (dpm) per 100 square centimeters of alpha radioactivity.
- d. Less than 100 disintegrations per minute (dpm) per 100 square centimeters of Beta gamma radioactivity.

7. Maximum weight and dimensions of containers to be handled at the site, without extra charge, shall be specified by the contractor.

D. Storage, Decontamination, Solidification and/or Concentration:

1. Facilities - Storage area, decontamination, solidification and/or concentration facilities shall be provided and shall be within the controlled area. A 10-foot cyclone, or equivalent, fence shall be provided around the controlled area. All structures shall be fireproof complete with water supply and voice communication facilities. All of these facilities shall be located at single site which shall be described in the bid proposal.
2. Solidification Facilities - Facilities shall be provided to convert all radioactive materials received in other than solid physical form to a solid form prior to burial. A description of the process to be utilized shall be described in the proposal. The solidification process shall provide that the resultant radioactive material meet the definitive requirements of a solid as defined in the glossary and only radioactive materials meeting this requirement shall be buried.

3. Storage - The storage of radioactive material in other than solid physical form will be permitted for temporary storage only for a period not normally in excess of one year. Prior approval of the Director shall be required for storage of radioactive material in other than solid physical form for periods to exceed one year.

4. Contamination Control

a. Equipment Release Limits - no conveyance, equipment, containers, tools or other miscellaneous materials shall be released from the controlled area or control of operating personnel if the surface contamination on any surface of the object exceeds:

- 1) 500 dpm/100 cm² - alpha (removable)
2) 100 dpm/100 cm² - Beta - Gamma
3) 0.1 mrem/hr at the surface - Beta - Gamma

b. Decontamination Facilities - A concrete slab, water, detergents, solvents, acids and all necessary facilities shall be available at the conveyance decontamination facility. It shall be the responsibility of the contractor, through his supervisory personnel to assure that no conveyance leaves the burial grounds with quantities of radioactive material in excess of those listed in Section a above.

c. Permissible Liquid, Particulate, and Gaseous Discharge Limits.

- 1) The facilities used for concentration or solidification of radioactive waste shall not create an airborne hazard.

Source of
Sanitary

shall not create a water-borne hazard.

- 3) All discharges, off-site, of liquid, particulate and/or gaseous wastes, shall not exceed the Maximum Permissible Concentrations (MPC) specified in the "Rules and Regulations for Protection Against Radiation Hazards", of the State of Illinois, after taking into account applicable dilution by ventilating air or water averaging the discharged concentration over a period not exceeding one year.
- 4) All waste discharges shall be monitored.
- 5) A permit is required for the disposal of liquid wastes to the "Waters of the State" under the Illinois Sanitary Water Board Act.

E. Burial Procedures

1. Only solid* radioactive wastes are to be buried.
2. Minimum of four feet of earth cover.
3. Hauled to cause run-off away from trench.
4. Material in trench shall be covered at the end of each business day, to minimize dispersion of radioactive materials by wind, or from the presence of wildlife.
5. Permanent location markers shall be placed at the ends of each burial trench.
6. A daily log shall be kept of each customer for which waste is buried, the quantity, type of activity, type of material or equipment containing the waste and its origin.

*defined on definition page.

F. Security

1. Site

The entire site shall be surrounded by 36-inch woven wire fence topped with four strands of barbed wire. Six by 12-inch weatherproof signs indicating radiation hazard shall be located every 100 yards along the fence facing away from the site. Appropriate gates for personnel and vehicular movement shall be provided.

2. Controlled Area

The control of access to this area shall be provided by a 10-foot cyclone-type fence enclosure. It shall be adequately posted with weatherproof 6 x 12 inch standard radiation warning signs and shall be provided with voice communication facilities.

Controlled area shall also include any area of the site in which there exists radiation at such levels that a major portion of the body could receive in one hour a dose in excess of 5 millirems or in any 5 consecutive days a dose in excess of 100 millirems.

W Required Surveys, Records and Reports

A. Environmental Pre-operational Survey and Report -- This survey and report shall not be required until after the site and contractor have been selected.

1. A pre-operational survey and report shall be performed, prepared and submitted to the Department subsequent to the award of the contract and prior to the acceptance of radioactive materials at the site for treatment and/or burial.
2. The report shall include a detailed description and discussion of the representative soil core samples which have been analyzed for ionexchange capacity, specific ground water conditions, the frequency of earthquakes and the expected water use in the area and other pertinent data prepared by a professional geologist.
3. A portion of this report shall describe meteorological and climatological characteristics of the site including prevailing wind direction with estimated maximum, average, and minimum velocities; local atmospheric conditions with a statement of opinion on the frequency of temperature inversions and the estimated 10- and 50-year rainfall predictions prepared by a professional meteorologist.
4. The report shall also include but is not limited to, the measure of radiation levels (background) in the existing ground and surface waters, air (both direct indication and airborne particulate matter) wildlife and vegetation of the controlled and peripheral off site areas.

B. Monthly Operating Report to The Director

1. Representative environmental surveillance data including air (external gamma and particulate) ground and surface water concentrations.
2. Monthly summary of the amount of waste (curies and volume) received, treated, stored and/or buried.
3. Tabulation of the customers and amount of waste received from each.

C. Environmental Monitoring Program

To satisfy the requirements of the "Monthly Operating Report" various types of environmental samples shall be collected.

1. Air particulate samples shall be collected and analyzed on a frequency deemed most apt to reflect changes in site operations and consistent with the equipment provided. It is suggested that continuous low volume air particulate samplers be located at the site boundaries and a high volume sampler at the burial area only during actual burial operations. Sampling frequencies of weekly and daily would appear appropriate for the continuous and high volume samples, respectively.
2. Ground water samples shall be collected and analyzed monthly from wells located according to the geologist's recommendations to yield representative samples of ground water characteristics.
3. Surface water samples shall be collected and analyzed on a frequency which reflects the operation of the facility and the use of water and discharge of radioactive materials.

4. Reporting of accidental Release of Radioactive material shall be required in compliance with Rule 15.007 of "Rules and Regulations for Protection Against ^{RADIATION} Hazards". Any samples from either air or water monitoring stations indicating an increase in activity shall be reported to the Director within 30 days with an accompanying survey and analysis report indicating contributing factors and/or reasons for the increase in activity.

D. Notification of Incidents

The State of Illinois, Director of Public Health shall be notified of any incident which results in the shutdown or impairment of the site.

VI Miscellaneous Requirements

- A. Insurance: Contractors shall submit a proposal for the amount of (MCLIA) insurance which the contractor considers adequate for the protection from liability that may arise in connection with the acceptance and burial of radioactive wastes and hold free both the customer and the State of Illinois.
- B. Disclaimer - Contractor shall require the shipper (customer) of radioactive waste to furnish a statement disclaiming any right to title of wastes after acceptance at the site for burial.

PROPOSAL TO THE
STATE OF ILLINOIS DEPARTMENT OF PUBLIC HEALTH
TO BUILD AND OPERATE THE
ILLINOIS WASTE BURIAL FACILITY

Submitted by

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14 June 1965

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PROPRIETARY INFORMATION

California Nuclear, Inc. considers the information presented in this Proposal as proprietary information of California Nuclear, Inc.. It is requested that it be used for contract negotiations only.

PROPOSAL TO THE
STATE OF ILLINOIS DEPARTMENT OF PUBLIC HEALTH
TO BUILD AND OPERATE THE
ILLINOIS WASTE BURIAL FACILITY

I. INTRODUCTION

California Nuclear, Inc. hereby proposes to build and operate a facility for the concentration and storage of radioactive wastes in Illinois. California Nuclear, Inc. also plans to collect and process radioactive wastes, construct and operate a radioactive laundry, supply protective clothing, supply decontamination services, whole body counting, technical services, and consulting services to the nuclear industries of Illinois and surrounding states.

These facilities and services will serve industrial, health, and governmental organizations in the midwest more economically and effectively than those presently available. California Nuclear, Inc. possesses the qualified and responsible personnel necessary to accomplish the objectives of the State of Illinois, and to assure the State officials of a high level of technical performance, and that all operations will be conducted safely in accordance with the pertinent State and Federal regulations.

This proposal is submitted in accordance with the "Criteria for a Site in Illinois for the Concentration and Storage of Radioactive Wastes," dated March-1965 and issued by the State of Illinois Department of Public Health. The proposal follows the general outline of subjects discussed in the proposal request.

II. DETAILED INFORMATION

A. Technical Experience

1. Contractor Experience

California Nuclear, Inc. was organized 1 May 1963 to conduct various operations as a service to the nuclear industry. Foremost among these services are the collection, transportation, processing, and disposal of radioactive wastes. Operations were begun in California in September, 1963 and extended in 1965 to Illinois, Indiana, Iowa, Washington, and Oregon. In addition to radioactive waste operations, California Nuclear, Inc. manufactures whole body counters and equipment for reduction of radioactive liquids to solids. A portion of the Articles of Incorporation and a copy of our Certificate of Authority to do business in Illinois are attached as Appendix A.

The Company is experienced in collection, transportation, and processing of radioactive wastes. The Company has been approved by the Atomic Energy Commission as technically capable of operating a waste disposal facility.

2. Staff Experience

The experience of the staff of California Nuclear's personnel is pertinent. The Company was organized by persons who had had extensive experience in the nuclear field, including the handling and disposal of radioactive wastes. The six employees responsible in the past for directing the policies of the Company and handling radioactive wastes under licenses of the Atomic Energy Commission, have had an average of nearly sixteen years experience in the nuclear field, see the biographical data sheets in Appendix B. Most of this experience has been of a supervisory nature. Mr. McLain has been in responsible charge of design of several large nuclear projects. He and Mr. Helgeson have written a large part of the technical summarizing reports dealing with

radioactive wastes and health physics, see biographical data sheets in Appendix B. Both of these men have had extensive consulting experience in the nuclear field and both men have taught various phases of Nuclear Engineering to government employees and groups of university professors.

Mr. Edwin C. Peterson will be located at the Illinois site and will be in responsible charge of the Illinois Waste Burial Facility. He will be Manager of the Company's Midwest Operations and Manager of the Illinois Waste Burial Facility. As such he will report directly to Mr. McLain or to Mr. Beierle in Mr. McLain's absence, see Appendix B for biographical data on Mr. Peterson.

B. Officers and Directors

1. Officers

Stuart McLain-President of California Nuclear, Inc. and Professor of Nuclear Engineering at Purdue University, Lafayette, Indiana;

Fredrick P. Beierle-Vice President of California Nuclear, Inc. and Manager of West Coast Operations, Richland, Washington;

George Lewis Helgeson-Vice President of California Nuclear, Inc. for California Operations, Pleasanton, California; and

William D. Johnson-Secretary-Treasurer of California Nuclear, Inc. and Health Physicist, Cowell, California.

2. Directors (see Appendix B for detailed data sheets)

Leo W. Anderson-Reactor Operator, Rural Cooperative Power Association, Elk River, Minnesota;

Fredrick P. Beierle-Vice President of California Nuclear, Inc. and Manager of West Coast Operations, Richland, Washington;

William D. Johnson-Secretary-Treasurer of California Nuclear, Inc. and Health Physicist, Cowell, California;

Stuart McLain-President of California Nuclear, Inc. and Professor of Nuclear Engineering at Purdue University, Lafayette, Indiana;

George A.H. Olson-Banker, Braham, Minnesota;

Philip N. Powers-Professor and Head of Department of Nuclear Engineering, and Director of the Engineering Experiment Station at Purdue University, Lafayette, Indiana, and

Edward R. Sanford-Professor of Physics, Ohio University, Athens, Ohio.

C. Methods of Operation

California Nuclear, Inc. will operate the Illinois Waste Burial Facility as a public utility in that all wastes shipped to the site in accordance with AEC and/or ICC regulations, and in accordance with California Nuclear, Inc. burial licenses in disposable containers (outer shielding containers may be removed and returned in accordance with AEC regulations), will be accepted and processed in accordance with our published rates, see paragraph II-G for suggested schedule of charges.

The detailed procedures to be followed in site selection, transfer of the land to the State, facilities to be constructed, and detailed procedures to be followed in the operations are discussed below.

1. Personnel

Mr. Fredrick P. Beierle is serving temporarily as Manager of our Midwest Operations. As soon as possible after the contract to open the site is signed with California Nuclear, Inc. we will assign Mr. Edwin C. Peterson as Manager of the Illinois Waste Burial Facility and Manager of the Midwest Operations. Mr. Peterson will have his office at the burial facility and will be a Vice President of California Nuclear, Inc.. Mr. Peterson organized and has supervised the radioactive waste burial facilities of Nuclear Fuel Services, Inc. at West Valley, New York, see Appendix B. Mr. Peterson has had 19 years of experience in the nuclear field in supervisory

positions.

A qualified engineer-health physicist will be obtained to supervise the operations at the site. Normally he will be physically present during operations involving reduction of radioactive liquids to solids, decontamination work, and actual burial operations.

Mr. George Lewis Helgeson, as the Company's Radiation Protection Officer, will assist Mr. Peterson in review of the health physics and safety aspects of the operations. Mr. Helgeson will not be located at the site but will make approximately bimonthly visits to the site. We will approve all requests for changes in our AEC licenses. Mr. McLain will make approximately quarterly visits and inspections of the site.

All other operating personnel will be hired locally.

All personnel involving the use, handling, treatment, storage, repackaging, reduction of liquids to solids, and burial of radioactive materials or hazardous chemicals, will receive instructions concerning the nature of ionizing radiation, its detection and biological effects. The minimum instruction period will be forty hours for ionizing radiation and ten hours for hazardous chemicals, including explosives and pyrophoric materials. In addition, on-the-job training will be given in the various procedures for safe and efficient operations. All the training will be conducted by experienced personnel and licensed health physicists.

2. Site Selection

California Nuclear, Inc. will cooperate and work with the State of Illinois Department of Public Health and the Atomic Energy Commission in the selection of a suitable site for burial of radioactive wastes in Illinois; to purchase land as mutually agreed to by the Atomic Energy Commission, the State of Illinois Department of Public Health, and California Nuclear, Inc.; to deed this land to the State of Illinois for use as a radioactive waste burial site, and to operate the waste burial site under the conditions described herein. It is understood that the site must be approved by the Atomic Energy Commission and the State of Illinois Department of Public Health prior to its purchase by California Nuclear, Inc.. Approval must cover the site in respect to hydrology, geology, meteorology, and general location in respect to population density, and there must be reasonable assurance that the Division of Licensing and Compliance of the Atomic Energy Commission will issue the necessary storage and operating licenses to California Nuclear, Inc.. As soon as the State signs the contract with California Nuclear, Inc., California Nuclear, Inc. agrees to purchase an option on land which appears to meet the requirements and which is mutually agreed to by the various parties involved, and to vigorously carry out the necessary surveillance, testing, and preparation of license applications. If suitable licenses cannot be obtained for the land for which the option was obtained, California Nuclear, Inc. agrees to obtain an option on another site mutually agreed to by the State of Illinois Department of Public Health and California Nuclear, Inc., and vigorously proceed to obtain the necessary data and licenses necessary to construct and operate a radioactive burial ground and other facilities at that site.

California Nuclear, Inc. has retained Professor M. William Pullen, of the Civil Engineering Department of Purdue University, as consultant in respect to site selection. His address is Box 468, West Lafayette, Indiana. Professor Pullen worked for the Illinois State Geological Survey for about 14 years and is familiar with the problems involved in the selection of the site, see his biographical data sheet in Appendix B. Mr. James E. Hackett, Geologist in Charge Northeast Illinois Office, Section of Ground Water Geology and Geophysical Exploration, Illinois State Geological Survey, Naperville, Illinois, has kindly supplied information and answered questions. We are continuing to look for specific sites in Illinois that will be satisfactory for burial of radioactive wastes. The preliminary report concerning possible sites which has been prepared by Professor Pullen is enclosed as Appendix C.

a. Area

Since about 100 acres will be required for the Illinois Waste Burial Facility, areas from 80 to 120 acres will be considered for purchase. This subject will be discussed with the Department of Health before an option on any land is purchased.

b. Definitive Survey

As soon as the contract for operation of the Illinois Waste Burial Facility is signed with California Nuclear, Inc., an option will be obtained on the most promising of the proposed sites, core drillings will be carried out, and the data needed for application to the Atomic Energy Commission for a license to bury low level solid radioactive wastes will be collected. In addition to the data collected in the preliminary survey, detailed descriptions of representative core samples will be presented. Core samples will be checked for water permeability and ion exchange capacity, including the exchange capacity for specific ions.

The background radiation levels will be measured in the (1) surface and ground water, (2) air-both direct readings and particulate matter (fallout), and (3) vegetation of the controlled and peripheral off-site areas. Except when and if krypton 85 is released, there should be no measureable increase in airborne radioactivity as a result of California Nuclear's operations. Due to the high population density in the Illinois area, we plan to ship any large quantities of krypton 85 to another site for discharge. Tritium gas disposal will be handled by mixing with hydrogen, passing over an exident or through a flame burner, condensing the water, mixing with concrete, and burial.

c. Reports

All reported will be discussed with the State of Illinois Deaprtment of Public Health and the Illinois State Geological Survey personnel. No wastes will be stored or buried at the site until the AEC licenses have been obtained and the land purchased and deeded to the State of Illinois.

d. Land Purchase

The land will not be purchased until it is certain that approval of its use as a low level radioactive burial site can be obtained. This includes approval by the Atomic Energy Commission and the Illinois Department of Public Health.

3. AEC Licenses

The data which must be collected to fulfill the requirements outlined above will be used to prepare the requests to the Atomic Energy Commission for the necessary amendments to our licenses. Our request to the AEC will request licenses to (a) permit California Nuclear, Inc. to conduct the storage of wastes at the proposed site, (b) reduce liquids to solids, (c) conduct decontamination services, and (d) bury radioactive wastes.

California Nuclear, Inc. has the following licenses, see copies

attached as Appendix D:

Atomic Energy Commission "Byproduct Source and Special Nuclear
Material License No. 13-10042 Amendment No. 1, dated October 26, 1964.

California Department of Public Health Radioactive Material License
No. 0838-59, dated July 1, 1964, and Amendment No. 6, dated October
13, 1964, Amendment No. 7, dated November 17, 1964, and letter of re-
newal, dated October 6, 1964.

We are in receipt of a telegram stating that our request for an oper-
ating license to bury radioactive wastes in Benton County, Washington, is satis-
factory in respect to "technical qualification, proposed equipment, facilities
and procedures."

4. Waste Burial Operations

The actual waste burial operations will be conducted in trenches.
The trenches will be dug with earth moving equipment and will be about 40 feet
wide by 20 feet deep. After digging a trench, burial operations will be con-
ducted by stacking the waste containers in the trench and back covering.* The
amount of permanent coverage will be at least five feet in the center and four
feet on the sides** with return of the surface soil to the top. Each trench
will be surfaced so that the maximum surface water drainage to the sides and
away from the trench will be obtained. After use the areas will be seeded
and mowed at least twice yearly to reduce deep rooting. A daily log will be
kept of burial operations and each trench will be marked at each end with a
permanent concrete marker.

* The Criteria for the Proposal, paragraph IV.E.4, states that the material
in the trench shall be covered at the end of each business day. We believe
that this is wasteful of the land and an unnecessary operating cost. How-
ever, backfilling will be conducted daily as required for safety and when
dose rates at the point of closest normal approach exceed 100 mr/hr.

** AEC Criteria require back coverage of five feet at the center and three
feet at the sides.

A copy of California Nuclear's "Radiological Physics Safety Manual for Atomic Energy Commission Operations" is attached as Appendix E.

5. Other Operations

a. Shipping Containers

California Nuclear, Inc. supplies drums (normally steel barrels) and cardboard and wood containers. Concrete shells with single closed ends are supplied, as required, for shielding. In addition, outer concrete or lead shielding containers are designed and supplied for special shipments. A special license to handle such shipments will be requested from the Atomic Energy Commission. These will be normally opened and only the inner containers buried.

b. Repackaging

Repackaging of solid radioactive wastes will be held to the minimum. Repackaging will be carried out in the controlled area. Only in emergencies, such as broken packages that might permit loss of radioactive materials in transport, will repackaging be done elsewhere. In general, repackaging under emergency conditions will be limited to placement in larger containers. In all cases of emergency repacking, the area will be inspected and decontaminated if required. Also, a report covering each incident will be prepared and submitted to the Director of the State of Illinois Department of Public Health and to the Chicago Operations office of the Atomic Energy Commission.

c. Hazardous Chemicals in solid form will be accepted. Hazardous chemicals will be accepted in liquid form only if they can be safely reduced to solids or disposed of as liquids. Explosive and pyrophoric chemicals such as sodium will be accepted for reduction to solids or burial under controlled conditions only after prior approval of the Director of the State of Illinois Department of Public Health. Acceptance of chemicals of this nature is regarded as a real service to Illinois industries.

d. Decontamination Services

California Nuclear, Inc. will inaugurate decontamination services as soon as possible after completion of the construction of the building to be built at the site. These will include decontamination of trucks and equipment which have become contaminated during shipment, burial, or other operations. In addition, equipment shipped to the site for decontamination will be accepted and decontaminated if, after inspection, it appears economical to do so.

California Nuclear, Inc. will offer a decontamination service to Illinois institutions. This service will include, but not be limited to, decontamination of equipment, facilities, and buildings. This work will be done under contract or at hourly rates plus materials, charges for waste disposal, etc.. In this respect California Nuclear, Inc. has conducted four radioactive decontamination contracts in California.

California Nuclear, Inc. will maintain supplies and instruments for emergency decontamination services. In case of an accident, personnel will be immediately dispatched by truck with equipment and supplies to inspect the suspected contaminated area, to permit isolation of the contaminated area, to permit measurement of the radioactivity, to determine what corrective action is necessary, and to decontaminate the area if authorized to do so.

e. Reduction of Liquids to Solids

Radioactive liquids will be received in approved ICC double walled or butane containers. They will be reduced to solids by mixing with absorption material such as cement. After mixing the material will be placed in wooden boxes or other suitable containers and, after setting, will be buried. As noted above, liquid hazardous chemicals will be handled in an identical manner except they will be accepted in containers approved for shipping the particular chemicals involved.

f. Gaseous Discharge

Radioactive xenons and kryptons will be released to the atmosphere under controlled conditions, stored for decay, or shipped to another site, see paragraph II-C-2-b above.

g. Health Physics

California Nuclear, Inc. has personnel on its staff who are qualified to conduct consulting in health physics, design of equipment for storage or handling of radioactive materials, etc.. Consulting services in those areas will be offered to Illinois institutions on an hourly fee basis. The services to be offered include:

- (1) Assistance in preparing license applications to State or Federal regulatory agencies.
- (2) Assistance in establishment of a complete health physics program, including environmental survey and meteorological progress.
- (3) Inspection or auditing of existing health physics programs to assure compliance with both the letter as well as the spirit of applicable regulations.
- (4) Solution of complex health physics problems using the latest scientific technology as well as through the use of sound established engineering and statistical practices.
- (5) Evaluation of problems caused by accident conditions which may involve exposures received from both external and internal sources of radiation.
- (6) Design of new or modifications to existing facilities to assure that the completed facility will be properly shielded, will have adequate but not over-designed ventilation, that installation of machinery and equipment will allow easy maintenance and will minimize radiation exposures, that plumbing of clean and radioactive fluid lines meet good health physics principles, and that traffic patterns, both vehicular and foot traffic, would minimize the possible spread of

contamination in the event of an accidental release of radioactivity.

(7) Calibration of many types of radiation detection instruments and design and calibration of alpha, beta, gamma, slow neutron, and fast neutron calibration facilities.

(8) Design of special health physics equipment and accessories, including casks and other shielded containers.

(9) Design and installation of air and stack sampling and monitoring systems.

(10) Design of waste treatment facilities.

h. Laundry

As soon as the waste burial site is in operation, a radioactive laundry will be built and placed in operation. This equipment will be installed in the decontamination and waste processing building described under paragraph II-E below. This equipment will be utilized to decontaminate clothing, face masks, rubbers, etc. on a commercial basis. The laundry staff will include a health physicist, assistants, and production workers. The latest and safest equipment will be used. A sump will be provided and discharge will be to the liquid treatment facility. The location of a commercial radioactive laundry in the Chicago area will result in substantial savings to customers in the Midwest as both shipping charges and time for laundering will be reduced.

California Nuclear, Inc. is planning a larger commercial radioactive laundry and associated decontamination facilities. This laundry will be placed in operation about two years following the signing of the contract. This will involve a capital investment for a new building and equipment. see Figure 1 Appendix F. The proposed building will be 40 x 60 feet. It will be constructed at the Illinois Waste Burial Facility. This laundry, under the supervision of a certified health physicist, will have facilities to handle all the contaminated

clothing from the Midwestern states. A further expansion is projected after five years.

i. Clothing and Protective Equipment

California Nuclear, Inc. will supply protective clothing, face masks, rubbers, etc. to commercial customers in the Midwest on a rental basis.

j. Inspections

California Nuclear, Inc. will perform nuclear safety inspections, conduct area monitoring surveys, and assist clients in establishing and reviewing operational procedures and safety programs. California Nuclear, Inc. has developed a commercial whole body counter, as discussed below. A counter will be installed at the Illinois Waste Burial Facility or at some more central location in the Chicago area and will be available to clients on a fee basis.

k. Whole Body Counter

California Nuclear, Inc. has developed and is manufacturing and marketing a whole body counter for use as a substitute for routine bioassay and safety inspections for use throughout the nuclear industry. The counter may be used for routine or emergency inspections in case of suspected inhalation or ingestion of any gamma emitting radioisotope. The advantages of the counter are low cost, rapid analyses, and cost of transportation. A person can be checked in about 30 minutes or less, depending on the size of the detector purchased with the counter.

l. Technical Services

California Nuclear, Inc. offers technical consulting services, supervises decontamination and waste disposal operations, analyses, nuclear safeguards and hazards, and prepares training manuals and procedures. The firm will write criteria, design equipment, and prepare detailed specifications for equipment and facilities to handle radioactive materials.

D. Agreement to Purchase Site

As noted, California Nuclear, Inc. agrees to purchase the land for the Illinois Waste Burial Facility mutually agreed upon by the Director of the State of Illinois Department of Public Health and California Nuclear, Inc. and deed the land to the State of Illinois.

E. Facilities

The physical layout and initial buildings to be built on the site are shown in Figures 1 to 3, see Appendix F:

Figure 1 - Laundry Facilities;

Figure 2 - Low Level Waste Disposal Area; and

Figure 3 - Operations Building, Illinois Waste Burial Facility.

As soon as California Nuclear, Inc. is awarded the contract to open the site, architect-engineering drawings of the buildings will be obtained. Contracts for construction of the service-storage-office and decontamination buildings will be let as soon as the Atomic Energy Commission operating license is received. The buildings are expected to cost about \$40,000. A radioactive laundry will be constructed at an estimated cost of building and equipment of \$45,000. In addition, suitable utilities and roads will be constructed.

Equipment for storage; for decontamination of trucks, equipment, and facilities; for reduction of liquids to solids; and for burial of radioactive wastes will be obtained. Some of these items are:

<u>Machinery and Equipment</u>	<u>Estimated Costs</u>
Truck crane, 20 ton (used)	\$ 15,000
Fork lift truck, 8 ton (used)	8,000
Two fork lift trucks, 3 ton (used)	5,000
Steam cleaner	1,000
Welder	1,000
Compressor	2,000
Handling Equipment	2,000
Two diesel tractors (1 new, 1 used)	30,000
Three trailers, 40 ft. semi	9,000
Trailer, tank	4,000
Bulldozer and backhoe	25,000
Holdup tank	1,500
Decontamination tank	1,000
Tools	5,000
Misc. supplies, etc	5,000

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(Brought forward-Machinery and Equipment estimated cost) \$115,000

Piping, site improvements and fencing	35,000
Instruments	10,000
Whole Body Counter with instruments	20,000
	\$180,000

The entire area will be surrounded by a 36 inch woven wire fence topped with four strands of barbed wire. Six by twelve inch weatherproof signs indicating a radiation hazard will be located every 100 yards along the fence facing away from the site. Appropriate gates will be provided.

The controlled area will be surrounded by a 10 ft. cyclone fence or equivalent.* It will be posted with 6 by 12 inch signs indicating a radiation area. Adequate voice communication facilities will be provided. All storage, reduction of liquids to solids, decontamination operations, etc. will be conducted in the controlled area. All operations during which there will exist a radiation level greater than 5 millirems per hour or 100 millirems in 5 consecutive days, will be conducted in the controlled area.

California Nuclear, Inc. has an office in Downers Grove, Illinois. The headquarters office is located in Lafayette, Indiana. Other offices and facilities are located in Pleasanton, California and Richland, Washington.

F. Schedule of Construction

As soon as the contract is signed by the State of Illinois with California Nuclear, Inc., contracts will be let for design of the buildings and for the necessary core drillings on the proposed site. These two activities are expected to take about 30 days followed by construction of the buildings and obtaining the AEC storage and operating licenses. These are expected to take

* The Criteria for the Proposal, paragraph (V.D.1), suggested a ten foot cyclone fence. We believe that a six foot cyclone fence topped with three strands of barbed wire will be satisfactory. We will build a ten foot fence if required to do so by the State of Illinois Department of Public Health.

about 90 days. Meanwhile, equipment and instruments will be purchased. Thus, receipt, storage, and burial of radioactive wastes will begin about four months from the date of the contract.

The radioactive laundry equipment will be ordered and on hand within this period. It will require about one month for its installation and test.

G. Schedules of Charges

The schedules of rates will be published after approval by the Director of the State of Illinois Department of Public Health. These rates may be escalated in accordance with the Cost of Living Index of the United State Department of Labor, based on the 1 July 1965 level. These rates are based on the assumption that 80 to 120 acres of land will be sufficient for the Illinois Waste Burial Facility. If substantially more land is required, it may be necessary to adjust these suggested rates in accordance with the higher capital costs. The entire schedules of rates and conditions are presented below:

1. Conditions

a. California Nuclear, Inc. will receive and maintain surveillance over solid radioactive wastes packaged in accordance with AEC, ICC, Bureau of Explosives, or special ICC permit regulations as specified in paragraph 3 below.

b. Title to the wastes will pass to California Nuclear, Inc. at time of unloading at the shipping dock or at the time of unloading rail shipments or piggyback shipments. Shipments by truck will normally be received at the shipping dock at the Illinois Waste Facility. Rail shipments will be received at the nearest rail switch,* and extra charges on the basis of full cost recovery plus six percent profit made for transfer to the Illinois Waste Burial Facility.† Surcharges may be added in accordance with the schedule listed in 2, below.

* The name of this switch will be added when known.

† It is expected that the extra charge will be dropped as suitable rail facilities should be found near the proposed Illinois site.

c. California Nuclear, Inc. will maintain adequate insurance for protection of liability arising in connection with acceptance and burial of solid radioactive wastes.

d. California Nuclear, Inc. technical and operating personnel will be available at a basic fee of \$15.00 per hour plus materials in the event of accidental rupture of packaging or where packaging does not comply with the special requirements.

e. California Nuclear, Inc. personnel and facilities will be made available at a basic fee of \$10.00 per hour plus materials for decontamination of shippers "or common carriers" vehicles that require decontamination before release.

2. Charges

California Nuclear, Inc. will make the following charges for operation of the Illinois Waste Burial Facility:

- a. Unload and bury containers approved by AEC, ICC, or Bureau of Explosives, or containers shipped under special ICC permit, which are less than 15 tons total weight per container\$ 0.75 per cubic foot
- b. Surcharges as follows will be added for containers in excess of 15 tons:

Weight, Tons		Surcharges	
		Per Shipment	Per Container
15 -	30	130.00 plus	200.00
30 -	50	260.00 plus	330.00
50 -	80	520.00 plus	475.00
60 -	80	1,600.00 plus	1,200.00
80 -	130	3,200.00 plus	2,500.00

c. A surcharge will be made for packages with a density over 200 pounds per cubic foot \$0.005 per pound for total weight over 200 pounds per cubic foot

d. Lower charges will be made for very large volumes delivered to the facility by a single organization in any single calendar year as follows:

Cubic Feet	Cost per Cubic Foot*
1 to 100,000	\$ 0.750
100,000 to 200,000	0.725
200,000 to 300,000	0.700
Over 300,000	0.675

e. Surcharges as follows will be added for special handling of containers consisting of two or more parts. These charges are for removing and burying inner containers which have been shipped inside a shielded coffin, cask or container.

Inner Containers With Surface Dose Rates	Per Shipment	Per Hour*
0.2 to 10 r/hr	\$ 25.00 plus	\$ 26.00
10 to 50 r/hr	50.00 plus	26.00
50 to 100 r/hr	100.00 plus	26.00
100 to 500 r/hr	250.00 plus	26.00

f. The minimum charge for any shipment will be \$20.00.

3. Packaging Requirements

a. California Nuclear, Inc. will accept all packaged radioactive wastes which meet Atomic Energy Commission, Interstate Commerce Commission or Bureau of Explosives requirements, and California Nuclear, Inc. license requirements.

b. Except as noted, no package may contain materials whether or not radioactive which could create significant hazards due to explosive or pyrophoric characteristics. Subject to approval of the Director of the Illinois State Department of Public Health, explosive and pyrophoric materials will be accepted and buried. Each such shipment must be cleared prior to shipment. Special charges will be made for handling these materials.

* Plus Illinois State charges

c. Properly packaged liquids will be accepted for disposal in accordance with California Nuclear, Inc. licenses.

d. Gases will be received subject to previous negotiations and subject to approval of the Director of the Illinois State Department of Public Health.

e. All shipments must be made in accordance with AEC and/or ICC regulations and in accordance with California Nuclear, Inc. burial licenses, in disposable containers, except that outer shielding casks may be returned if proper approval can be obtained from the AEC. All disposable containers must be self supporting and capable of remaining intact during handling under all weather conditions prior to burial.

f. Charges for all containers that do not comply with the packaging and labeling requirements of California Nuclear, Inc. or comply with the above stated terms must be negotiated separately.

g. Each shipper must furnish a statement to California Nuclear, Inc. disclaiming any right to title of wastes after acceptance by California Nuclear, Inc.. The following statement has been found acceptable by the Federal Government:

"Title to all materials, whether or not they were previously Government-owned, contained in waste furnished for disposal under this contract (except material which is required by Section 52 of the Atomic Energy Act of 1954), as amended, to be owned by the Government shall be deemed to be vested in California Nuclear, Inc. immediately upon acceptance of such material by California Nuclear, Inc. from the shipper shall have no right to the recovery of any materials contained in such waste nor any credit for their potential value."

²⁰The \$26.00 per hour referred to, see Page 19, includes consulting and preparation of proper procedures as well as the additional equipment, time and labor used to handle this equipment. A special AEC license will be required for these operations.

h. No material known to contain over 2.7 curies per cubic foot will be buried without prior approval of the Director of the State of Illinois Department of Public Health.* No container with dimensions less than four inches on any side will be accepted nor will any container with a volume less than one cubic foot be accepted. These specifications are listed in our AEC license 13-10042-1, Amendment No. 1.

4. Delivery.

- a. Waste shipments will be accepted at the Illinois Waste Burial Facility during the hours of 0830 to 1600 on week days, legal holidays excepted.
- b. Shipments will be received at other times by prior arrangement. Extra charges for such receipt may be added.
- c. Each truck or railroad car will normally be unloaded before the end of the next succeeding normal business day. However, an effort will be made to unload all trucks on the day of arrival. California Nuclear, Inc. will not take responsibility for demurrage on unscheduled shipments.

5. Shipping Forms

Each shipment must be accompanied by completed "Radioactive Shipment Record Form". These forms are available from California Nuclear, Inc. Shipments received without these forms may be delayed as the information must be available prior to acceptance of the wastes at the Illinois Waste Burial Facility.

6. Amendments

As the needs of our customers change, California Nuclear, Inc. will obtain the required amendments to our facility and burial licenses. We will keep the Director of the State of Illinois Department of Public Health informed of

* The Criteria states that no container with over one curie per cubic foot may be buried. However, AEC licenses permit burial of materials up to 2.7 curies per cubic foot. We have applied for such a license.

our proposed amendments and accept material for burial or processing subject to his approval. If California Nuclear, Inc., through request a customer, encounters a radioactive waste shipment that requires additional handling or techniques not previously used, fair and equitable rates will be negotiated.

7. Financial Status

The certified "Statement of Financial Condition as of May 31, 1965" for the Company is attached, see Appendix G. The financial statement indicates a net worth of the Company on May 31, 1965 of \$119,589.73. Additional funds are available to California Nuclear, Inc. as follows:

Small Business Administration \$ 147,000

A Small Business Administration loan has been approved subject to the State of Washington signing the sublease with California Nuclear, Inc., for construction of buildings, purchase of equipment, and operating facilities at the Richland, Washington, Hanford Low Level Waste Disposal Facility. This loan will not be available for use in Illinois but it does mean that funds on hand will not be required to finance the Richland site.

Sale of Stock \$ 0.00

California Nuclear, Inc. applied to the Securities and Exchange Commission for authority to issue 30,000 shares at \$10.00. The Commissioner of Corporations of the State of California has approved issuance of \$173,980 of stock in place of present loans to the Company.

8. Licenses

California Nuclear, Inc. agrees to make every effort to obtain promptly the necessary waste storage and burial licenses from the Atomic Energy Commission.

9. Facilities Location

All facilities will be located on the site, see Figure 2 of Appendix F.

10. Agreement with the State of Illinois

California Nuclear, Inc. agrees, as stated above, to purchase a mutually agreeable site for the Illinois Waste Burial Facility and deed the land to the State of Illinois in return for an extended contract to operate the Illinois Waste Burial Facility. California Nuclear, Inc. will construct the necessary utilities, buildings, and roads at no cost to the State of Illinois.

California Nuclear, Inc. suggests that the contract be for at least 40 years.

California Nuclear, Inc. suggests that it collect and transfer to the State of Illinois a fee of \$0.05 per cubic foot of solid wastes buried and that this fee be assigned by the State of Illinois to a perpetual maintenance fund. California Nuclear, Inc. agrees to pay the State of Illinois Treasurer 120 days following the signing of the contract to build and operate the Illinois Waste Burial Facility with California Nuclear, Inc., a sum of \$2000 as a guaranteed payment for burial of 40,000 cubic feet of wastes in the following year. A like sum will be paid annually on the date of the initial payment. In addition, any amounts over \$2000 collected in any one year will be paid quarterly within 10 days after the end of each quarter.

11. Financial Responsibility

The financial reports have been mentioned above, see Appendix G. California Nuclear, Inc. is not a subsidiary corporation. However, Chicago Fly Ash Company, 3525 West Peterson Avenue, Chicago, Illinois, has made a substantial loan to the Company and this will be converted into stock when permission is received from the SEC and the California Commissioner of Corporations to do so. California Nuclear, Inc. intends to apply for a Small Business Administration loan to assist in financing the construction and purchase of equipment for the Illinois Waste Burial Facility, as noted previously.

12. Insurance

California Nuclear, Inc. carries \$1,000,000 of NELIA insurance, see Appendix H. We carry \$200,000 for each accident, and \$200,000 for property damage and like quantities for automobile insurance. In addition, we carry Workmen's Compensation insurance or equivalent insurance, as required in each state, for our employees; fire and theft insurance on our facilities; see Appendix H.

13. Description of Company's Experience

See paragraph II-A above.

14. Schedule of Charges

See paragraph II-G above.

15. Rules and Regulations

California Nuclear, Inc. acknowledges that it is aware of and

shall comply with all rules and regulations, including those of the U. S. Atomic Energy Commission, the State of Illinois, the Interstate Commerce and others which may become effective from time to time following the award of the contract to build and operate the Illinois Waste Burial Facility to California Nuclear, Inc..

III. ADDITIONAL INFORMATION

California Nuclear, Inc. wishes to submit the additional information presented in the following paragraphs:

A. Instruments

California Nuclear, Inc. will supply sufficient instruments to monitor personnel, equipment, and packaged radioactive wastes. The instrument list will be similar to the following, which is the list of instruments we now own:

- 3 - Eberline Gas Proportional Alpha Counters, Portable Model PAC-3G
- 6 - AC-2G Probes
- 4 - Eberline Beta-Gamma Survey Instruments, Model #510
- 2 - Eberline Gamma Dose Rate Meter, Model Gadora-1
- 1 - Tracerlab Model SC-19A Binary Utility Scaler with TGC-1L mica window, 1 Timer, Model SC42A
- 1 - Gelman Hurricane Air Sampler, Cat. No. 16002, 150 Cfm with Hurricane Filter Holder, Cat. No. 16050, 4 in. diam with Gelman W-41 filter paper
- 20 - Bendix Self Reading Dosimeters, Model 362 and Charger, Model 906-1
- 2 - Technical Associates, Model AP-1, CP

- 2 - GM end window probes
- 3 - Air Samplers
- 1 - Staplex Air Sampler
- 1 - Technical Associates Lead Shield IS-7
- 1 - Photo multiplier crystal

We will supply monitoring instruments for beta and gamma from background to 500 r/hr and for alpha radiation for the range of 50 to 50,000 disintegrations per minute per 100 square centimeters.*

Two personnel monitoring ionization chambers and one film badge will be furnished each person normally working in or who visits the controlled area.

B. Material to be Accepted

California Nuclear, Inc. will accept all radioactive materials submitted in containers approved by the AEC, ICC, or Bureau of Explosives and which meet California Nuclear's regulations. Wastes in all physical forms will be accepted.

C. Special Requirements of the Facilities

Both buildings which will be built immediately after the contract is signed with California Nuclear, Inc. will be supplied with voice communication facilities, water, and other utilities, see Figure 3, Appendix F.

D. Solidification Facilities

The liquids will be reduced to solids in a cement mixture by mixing with cement, vermiculite, or other absorption materials. The mixed materials

* It is expected difficulty will be encountered in obtaining commercial instruments to read 50 d/m with accurate results.

will be placed in plastic lined boxes and buried. California Nuclear, Inc. has developed low cost equipment for reducing liquids to solids. Devices of this kind will be sold to the public for their use.

E. Monitoring

During operations area monitors will be set up near the actual operating site and at a few points on the periphery fence. Periodically the surface soils and underground water will be sampled and analyzed for changes in radioactivity levels.

F. Monthly Operating Report*

Monthly operating reports will be prepared and submitted to the Director of the State of Illinois Department of Public Health. These will include the following reports: Environmental surveillance data, including air, ground water, surface concentrations; amount of wastes, including curies and volumes received, treated, stored and/or buried; and tabulation of the customers and amount of waste received from each.**

G. Whole Body Counter

As noted previously, California Nuclear, Inc. has developed a low cost shadow shield whole body counter. The pilot model has been completed. Manufacture and sale of these devices has begun.

* Monthly operating reports were requested in the Criteria. We recommend that this requirement be changed to quarterly.

** We will supply the names of customers and the amounts of wastes received as requested in the Criteria. However, we believe that this information should be treated as business privacy information and not reported to the State.

H. Title to the Wastes

As noted in the Schedule of Charges, California Nuclear, Inc. agrees to obtain disclaimers to the title to all wastes shipped to the Illinois Waste Burial Facility. In this respect California Nuclear, Inc. takes title at the customers' shipping docks to all wastes which it collects. It will transfer title to the State of Illinois at the Illinois Waste Burial Facility shipping dock.

I. Segregation

Source and special nuclear materials will be segregated in storage, handling, and burial operations to avoid a critical mass.

J. Contracts

The following contracts or tentative agreements are in force at the time of writing:

Illinois

Abbott Laboratories, North Chicago
Evanston Hospital Assn., Evanston
Chicago Wesley Memorial Hospital, Chicago
Illinois Institute of Technology, Chicago
Department of Water and Sewers, Chicago
MacNeal Memorial Hospital Assn., Berwyn
Northwestern University, Chicago
Quaker Oats Company, Barrington
Veterans Administration Hospital, Hines
Sinclair Research Laboratory, Harvey
Veterans Administration West Side Hospital, Chicago
Westclox Company, LaSalle

Iowa

College of Osteopathic Medicine & Surgery, Des Moines
Iowa State Teachers College, Cedar Falls
Iowa State University, Ames
Marycrest College, Davenport
Mercy Hospital, Davenport
St. Luke's Methodist Hospital, Cedar Rapids
University of Iowa, Iowa City

Indiana

American Maize Products, Roby
Drs. Buchanan, Thornton & Luckhart, South Bend
Eli Lilly & Company, Indianapolis

Washington

Central Washington State College, Ellensburg
Deaconess Hospital, Spokane
Gonzaga University, Spokane
King County Hospital System, Seattle
Nuclear Reactor Laboratory, Washington State University, Pullman
Sacred Heart Hospital, Spokane
Seattle University, Seattle
Tacoma General Hospital, Tacoma
Tumor Institute of the Swedish Hospital, Seattle
Veterans Administration Hospital, Seattle
Walla Walla College, College Place
Western Washington Experiment Station, Puyallup
Whitman College, Walla Walla

Oregon

Portland State College, Portland
Reed College, Portland
Veterans Administration Hospital, Portland

California

Advanced Technology Laboratories, Mountain View
American Standard, Monrovia
California Institute of Technology, Pasadena
Children's Hospital, Bruce Lyon Memorial Laboratory, Berkeley
College of the Pacific, Stockton
General Atomics, San Diego
General Radioisotopes Processing, Berkeley
Hazelton Nuclear Science, Palo Alto
Highland Alameda County Hospital, Oakland
Kaiser Institute Foundation, Richmond
Marine Island Naval Shipyard, Vallejo
Pacific Gas & Electric Company, San Francisco
Pasadena Foundation for Medical Research, Pasadena
Radiation Products, Santa Clara
St. Luk's Hospital, San Francisco
Salk Institute, San Diego
Scripps Institute, La Jolla
University of California, Berkeley
University of California, Davis
University of California, Los Angeles
University of California, Medical Center, San Francisco
Varian Associates, Palo Alto
Watkins-Johnson Company, Palo Alto
X-Ray Engineering, San Mateo

California Nuclear, Inc. has also conducted four decontamination projects. These are as follows:

Advanced Technology Laboratories, Mountain View, California
Bush Electric Company, San Francisco, California
Dental Metals Company, San Francisco, California
Varian Associates, Palo Alto, California

California Nuclear, Inc. has expended considerable effort in market surveys. We estimate that we will receive in excess of 50% of new business from the number of licenses listed by state below:

Alaska	17	Nebraska	68
Arizona	68	Nevada	27
California	1094	New Mexico	83
Colorado	146	North Dakota	24
Hawaii	46	Oklahoma	4
Idaho	25	Oregon	82
Illinois	450	South Dakota	45
Iowa	110	Texas	800
Kansas	77	Utah	66
Minnesota	100	Washington	106
Missouri	200	Wisconsin	149
Montana	28	Wyoming	34

K. Accidents

All accidents will be documented and reported in accordance with applicable AEC and State of Illinois Department of Public Health regulations.

IV. FUTURE EXPANSION

A radioactive burial site facility acts as a stimulant to nuclear industries which produce radioactive wastes in amounts large enough that these wastes become an appreciable item in their operations. These industries are small. They include equipment decontamination, radioactive laundry, isotope packaging, gamma ray source packaging, etc. These industries in turn tend to attract related industries; so a waste burial

site tends to become the center of a group of nuclear related industries.

V. COMPANY POLICIES

The policies established by California Nuclear, Inc. are:

A. To act as a service company to the nuclear industry. In this respect the Company will undertake any project involving waste handling, decontamination, fuel movements, etc provided that the work is feasible and safe. The Company is presently negotiating a contract to package, ship and dispose of large quantities of high level wastes. This has required development of new procedures and special equipment. We have conducted decontamination projects which required a sophisticated knowledge of the materials and facilities involved.

B. As a service company, we offer consulting services, waste collection, transportation, and decontamination services. We plan to augment these with other services as soon as they may be developed.

C. To charge reasonable fees. In this respect we propose a burial fee based on a per cubic foot basis plus the State's fee for the Illinois Waste Burial Facility. We believe the Illinois Waste Burial Facility will return a reasonable profit at the suggested rates and, in addition, will effect a significant reduction in waste disposal charges to the nuclear industry.

D. To maintain a high quality technical staff and a highly trained, skilled, and experienced operating staff. At present we have the technical staff. This staff will be augmented with competent persons as business expands. Operating personnel will be hired locally and trained.

E. To conduct our operations as a public utility in that all wastes will be accepted subject to prior bookings.

VI. SUMMARY

California Nuclear, Inc. staff has very extensive experience in the nuclear field. Our policies are to become a real service company to the nuclear industry and to do the best job technically possible at a reasonable profit.

CALIFORNIA NUCLEAR, INC.

Stuart McLain, President

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- Appendix A - Articles of Incorporation (in part)
Certificate to do Business in Illinois
- Appendix B - Biographical Data Sheets
- Appendix C - Preliminary Site Selection Report
- Appendix D - AEC License
California License
ICC Permit
- Appendix E - Radiological Physics Safety Manual
- Appendix F - Figure 1: Laundry Facilities
Figure 2: Low Level Waste Disposal Area
Figure 3: Operations Building
- Appendix G - Financial Report
- Appendix H - Insurance Policies

mh/2/12/71

UNITED STATES ATOMIC ENERGY COMMISSION

MEMORANDUM BY THE

DIVISION OF MATERIALS LICENSING

IN THE MATTER OF

CALIFORNIA NUCLEAR, INC.

DOCKET NO. 27-39



The pending application involves the application for license amendment by California Nuclear, Inc. to permit burial of radioactive wastes at its facility located in Bureau County, Illinois, near Sheffield, Illinois.

Existing License of California Nuclear, Inc.

California Nuclear, Inc. was licensed by the Atomic Energy Commission on July 15, 1964, to receive packaged radioactive waste material for transportation to land burial sites. Subsequently, license amendments were issued on October 26, 1964, and September 10, 1965, to California Nuclear, Inc. which authorized a waste processing and storage facility at Hanford, Washington, and burial of wastes at Hanford. On August 3, 1966, California Nuclear, Inc. was authorized to store wastes at a facility in Lockport Township, Will County, Illinois. On December 2, 1966, a license amendment was issued which authorized a waste processing and storage facility near Sheffield, Illinois, in Bureau County, Illinois.

The original license issued to California Nuclear, Inc. and all subsequent amendments to the license were issued after the AEC determined that the licensee's proposed equipment facilities and procedures were adequate to protect health and minimize the danger to life and property; the licensee was qualified by training

and experience to conduct the waste disposal services in a manner that would protect health and minimize danger to life and property; and the issuance of the license and amendments to the license would not be inimical to the common defense and security or to the health and safety of the public.

Present Application

On August 16, 1966, California Nuclear, Inc. requested further amendment to its license with respect to operations at the site near Sheffield, Illinois. The application requested that the portion of the license which permits the licensee to receive, process, repackage and store wastes at the site near Sheffield, Illinois, be amended to provide for the burial in the soil of such wastes. The August 16, 1966, application and amendments to this application contain information on the geology and hydrology of the proposed disposal site.

Site Description

The site at which California Nuclear, Inc. is now authorized to receive, process, package and store radioactive materials and at which it desires to bury the radioactive materials, consists of approximately 27 acres in Bureau County, Illinois. The site is located approximately west-southwest of Sheffield, Illinois, and about 3 miles southeast of Mineral, Illinois. The population of Sheffield is approximately 1,080 people, while that of Mineral is 330 people. The specific area is defined as 26.67 acres off of the south side of the Northeast Quarter of the Southwest Quarter, and the Southeast Quarter of the Southwest Quarter, and about 2 miles south of Interstate 80, all in Section 27, Township 16 North Range 6 East of the Fourth Principal Meridian, Bureau County, Illinois. The

20 acres of this site in which waste will be buried is owned by the State of Illinois. The area consists of low hills overlooking the Green River Valley to the north. The site is near the divide between the Green and Edwards River Valleys with drainage by small creeks to the Green River. A complete analysis of the geology and hydrology of the site prepared by the United States Geological Survey is attached as Appendix "A". The average permeability and the average ground water velocity at the site are relatively low. These low rates combined with the high ion exchange capacity of the soil at the site indicate that the possibility of migration of radioactive material to local water supplies is very low.

Facilities and Equipment

The Sheffield facility of California Nuclear, Inc. will include two buildings. One building will be used for offices and equipment maintenance only. No storage or processing of radioactive materials will be carried out in this building. The second building will be all metal with a concrete floor 20 feet by 36 feet in size. The building will be equipped with a sump and controllable air flow with an exhaust fan and an absolute filtering system. There will be no drain from this building. This building will be equipped with a sprinkler system and will be equipped with a system which will automatically notify the Mineral Fire Department in the event of fire. Storage of packages at the site is limited to six (6) months, after which time they must be disposed of. The licensee has established procedures for all phases of its operations at the Sheffield

site and will have adequate radiation detection instruments and personnel monitoring equipment available at the facility.

Operations

Under the existing license authority, transportation of radioactive material to and from California Nuclear, Inc. facilities is subject to applicable regulation of the Department of Transportation and other agencies of the United States having appropriate jurisdiction. In any instances where such regulations are not applicable, such as intrastate transportation, transportation of radioactive materials must be carried out in accordance with a license condition that contains the same requirements as the Department of Transportation regulations. The licensee's procedures for the receipt and transportation of radioactive materials provides its employees with adequate and appropriate instructions for the safe transportation of radioactive materials in accordance with the requirements of the Department of Transportation and other Federal regulations and the Atomic Energy Commission license requirements.

The license now provides that California Nuclear, Inc. shall not possess or store at the Sheffield facility at any one time more than:

1. 50,000 curies of byproduct material.
2. 40,000 pounds of source material.
3. 5,000 grams of special nuclear material.

The type of radioactive wastes handled by California Nuclear, Inc. could include any materials provided that the possession limits of the license are not exceeded.

It does not include high-level radioactive liquid wastes resulting from the chemical processing of irradiated fuels removed from reactors.

California Nuclear, Inc. will bury packaged waste as received from customers or in packages prepared by the licensee. It is not expected that once the packages are in the ground that they will maintain their integrity and will provide protection against loss of contents. The packages containing radioactive wastes provide ease of handling and prevent spread of radioactive material during burial operations. Burial operations will be carried out in open pits or trenches. These trenches will be dug by standard earth-moving equipment so that they will be approximately 300 to 500 feet long, 20 to 40 feet wide, and 20 to 25 feet deep. Backfilling operations will normally be conducted at the end of each day's operations to minimize the dose rate to operating personnel and to minimize possible spread of contamination to the environment. Earth will be mounded over the top layer of packages in a trench so that there will be a minimum of 4 feet of earth at the center and 3 feet of earth at the edges. The mounding provides a measure of protection against infiltration of water into the trench. Concrete monuments will be erected at each end of a filled trench. A metal plate will be placed on each monument which will specify the total activity of byproduct, source, and special nuclear material contained in the trench at the time of burial and the date on which the monuments were erected. The burial area will be surrounded by a 6 foot cyclone-type fence topped with barbed wire to prevent unauthorized

entry. The fenced area and buildings within the area will be locked at all times when work is not being performed.

Personnel

California Nuclear, Inc. has experienced personnel who are qualified to carry out the waste disposal operations. The company has also established a training program for new personnel. These individuals may be designated as users by the licensee's Radiation Protection Officer upon successful completion of the training program.

State Ownership of the Site

Section 20.302 of the Commission's regulation, "Standards for Protection Against Radiation", 10 CFR 20, provides that persons engaged in land burial of radioactive wastes received from other persons must do so on land owned by the Federal government or by the State government. The primary purpose of this provision is to assure the necessary long-term control of such land in the event the licensee is unable, for any reason, to maintain the operation. The twenty (20) acres of the Bureau County site, in which all waste will be buried, has been deeded to the State of Illinois, and California Nuclear, Inc. will operate at the site under a lease from the State. The lease provides that any failure on the part of the licensee to comply with applicable laws, regulations and ordinances of the United States and the State of Illinois, the State has the right to terminate the lease and take possession of the premises. The State of Illinois has assured the Commission that in the event of any default

by the licensee with the terms and conditions of the license, specifically including abandonment of the premises, the State shall be responsible for surveillance, and maintenance of the site is maintained by the State. Under the terms of the lease, California Nuclear, Inc. will pay a specified rental to the State of Illinois and a specified amount of money for each cubic foot of radioactive waste for which burial or storage charges have been made during the preceding year. The money accrued from the payment of the burial and storage will be placed in a perpetual maintenance fund for use in the event that the State will be required to assume surveillance and maintenance obligation

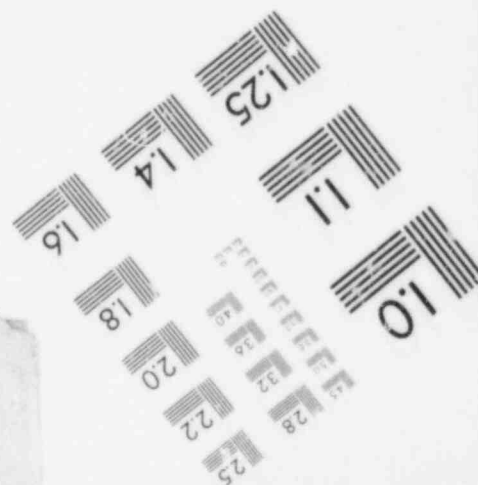
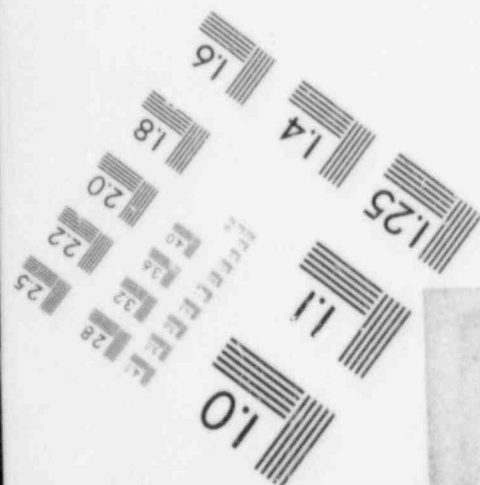
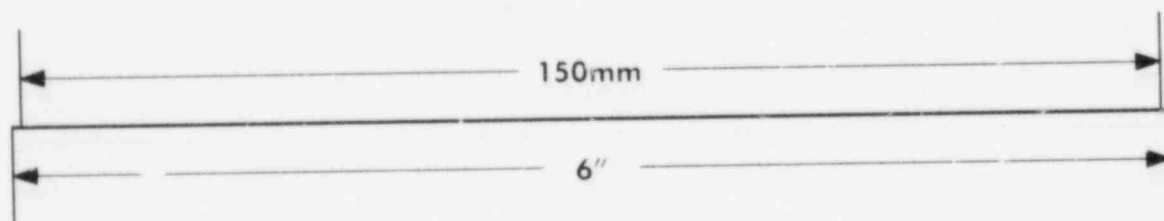
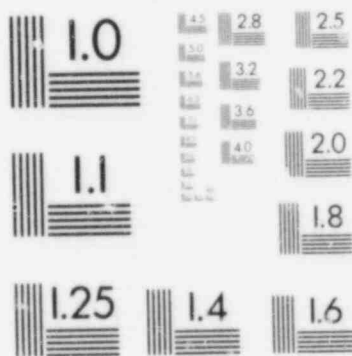
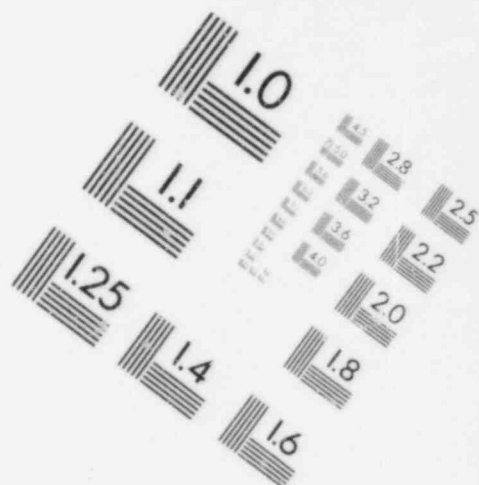
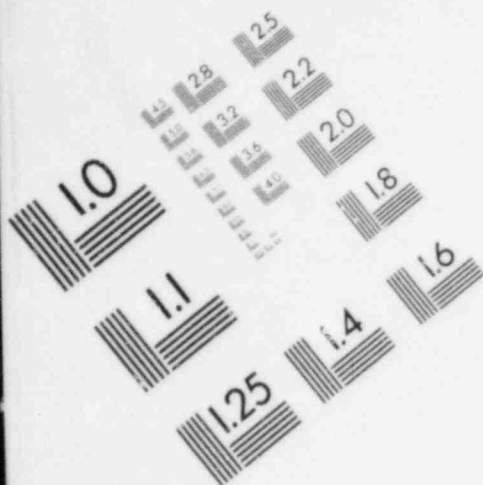
Environmental Monitoring

California Nuclear, Inc. has performed an environmental survey to establish the background radioactivity of vegetation, soil and water in the vicinity of the site. The licensee has established a program for continued environmental monitoring to determine if radioactive material were released from the site. If the levels of radioactivity increase, the licensee is required to perform further measurements to determine if the increase is due to burial operations. Should the increase in radioactivity be determined in the burial ground, the licensee must notify the AEC. The Commission will take such action as will be deemed necessary in light of the findings.

Conclusion

The Commission has reviewed the application for license amendment and the analysis of the geology and hydrology characteristics of the site prepared by the U. S. Geological Survey. Considering these factors and the procedures

IMAGE EVALUATION
TEST TARGET (MT-3)



to be followed by the applicant, we have concluded that there is reasonable assurance that there will be no release of radioactive wastes from the site to the surrounding environment in concentrations in excess of 10 CFR 20 limits

The Commission has determined that the applicant's facilities, equipment, procedures and qualifications are adequate to protect health and minimize danger to life or property.



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS
DIVISION

SEP 17 1976

The Honorable Marcus E. Rowden
Chairman, Nuclear
Regulatory Commission

Dear Mr. Rowden:

One objective of our survey of Federal programs for disposing of obsolete and unused nuclear facilities is to evaluate the way these facilities have been decommissioned. During initial work we learned that the Atomic Energy Commission (AEC) had instructed its field offices in June 1974 to identify all previously owned, leased, or other property which could have been contaminated with radioactivity. This action was directed at past activities for which available data was insufficient to insure that these sites did not present a radiological hazard. The field offices identified 49 locations.

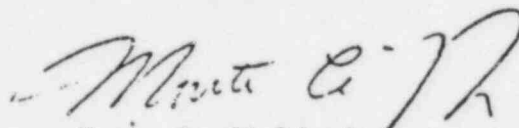
Since then, however, additional sites have been identified by both the Energy Research and Development Administration (ERDA) and by non-Federal parties. For example, by reviewing all past AEC contracts, ERDA added 10 more sites to the list of possible contaminated sites.

The possibility that other sites exist which escaped ERDA's files search began to concern us. Of particular concern were those activities which had been started and terminated under the auspices of AEC's regulatory body. Consequently, we reviewed documentation of the clean-up activities at terminated licensees' facilities. We found that records for recently terminated activities contain adequate assurance of decontamination. Also, we reviewed records of about 80 licensees which conducted operations in the late 1950's-early 1960's. Most of these files did not mention decontamination activities at all.

Early programs of the AEC did not provide for the same care and attention now given to radiological safety and to related documentation. To terminate a license, an applicant submitted a statement that his facilities were appropriately decontaminated. Verification of this by AEC inspectors was done selectively with emphasis directed towards handlers of loose material where there was a higher possibility of contamination. We found few reports of these verifications for holders of source material and sealed source producer licenses.

We believe that the Federal Government must be able to assure the public that no residual contamination problems exist at sites which were operated under a Federal contract or a Federal license. In view of (1) the fluidity of the ERDA list of possible sites, (2) the lack of documentation for some terminated license activities, (3) the potential for oversight resulting from the reorganizations that have occurred, and (4) the less stringent radiological protection standards and procedures that existed in the past, we are not convinced that this assurance can be made. We would appreciate your views as to whether NRC can make this assurance.

Sincerely yours,


Monte Canfield, Jr.
Director



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

E. Lewis

OCT 15 1976

Mr. Monte Canfield, Jr.
Director
Energy and Minerals Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Canfield:

This refers to your letter of September 17, 1976, to Chairman Rowden concerning your survey of Federal Programs for disposition of obsolete and unused nuclear facilities. Our reply, of course, will be concerned only with those activities which are subject to licensing by NRC or its predecessor AEC.

It is the current NRC practice, and it was the practice of the AEC Regulatory staff previously, to evaluate each licensed activity at the time of license expiration or termination to determine whether decontamination of facilities and equipment by the licensee and close-out inspection by the Regulatory staff was necessary. These determinations were based on the type, form and amount of material authorized, and the nature of the activity conducted. For example, activities involving sealed sources of radioactivity or short half-life radioactive materials, where there was little possibility of a contamination problem, were not of concern in this regard. However, attention was directed to those activities which involved the processing or use of radioactive material in unsealed form where it was likely that contamination of equipment and facilities could occur.

As you point out in your letter, the documentation for determining that facilities were decontaminated (up to the early '60's) was not as complete as we now require.

Nevertheless, we believe that there are no residual contamination problems of significance from a public health and safety standpoint at sites that were operated pursuant to AEC or NRC licenses.

Mr. Monte Canfield, Jr.

- 2 -

However, we plan to reexamine our files of licenses terminated prior to 1965, of which there are a considerable number, over the next several months to determine if there are any cases where a significant public health and safety problem might exist at a former licensed activity. We will take appropriate action as necessary.

We will keep you informed of the results of this examination.

Sincerely,

(Signed) Lee V. Gossick

Lee V. Gossick
Executive Director for Operations

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