NRC PUB.

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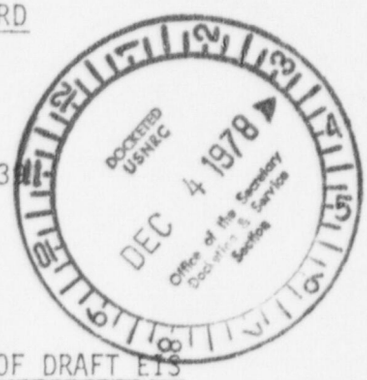
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
NUCLEAR ENGINEERING COMPANY, INC.	)	Docket No. 27-3
	)	
(Sheffield, Illinois Low-Level Radioactive Waste Disposal Site)	)	



NRC STAFF'S OPPOSITION TO MOTION TO COMPEL FILING OF DRAFT EIS

The NRC Staff opposes the Nuclear Engineering Company's (Applicant's) motion to compel the NRC Staff to file a draft environmental impact statement by December 1, 1978, and to exclude from consideration therein alternative sites to the low level waste disposal site Applicant seeks to have licensed. The NRC Staff opposes the motion as:

- There is no basis in this proceeding upon which the Board could order the Staff to issue a draft EIS.
- Delays in the issuance of the Draft EIS have been caused by the Applicant.
- As a matter of law the draft EIS must consider alternative sites.
- The Board cannot prohibit the Staff from considering alternative sites in an EIS.

BACKGROUND

The Applicant has an NRC licensed 20 acre low level waste burial site in Sheffield, Illinois on land owned by the State of Illinois. Although

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it at one time sought permission to bury more waste on the 20-acre site, it now only seeks permission to bury low level waste on its adjacent 168 acre site, which it states it will tranfer to the State of Illinois. (Motion to Compel, p. 14).[1/] The Applicant first filed an application for permission to bury nuclear waste on this 168 acre site on December 30, 1976. (Affidavit of M. Bell). It refused to make parts of the environmental report accompanying the application public so that the application could be processed until August 19, 1977 (Id.). It formally gave such permission in a letter of September 7, 1977. Thereafter the notice of availability of the environmental report and notice of opportunity to request a public hearing was published in the Federal Register (42 FR 61523, December 5, 1977).[2/]

[1/] The Applicant is a subsidiary of the Teledyne Industries, Inc. Under 10 CFR 20.302(b) the Commission may not approve any application for waste disposal on land not owned by the Federal government or a State government. The Federal government does not own the land here involved. The State of Illinois where the facility involved is located, notified Teledyne that it would hold it responsible for the operation of the subject waste disposal site. (See letter of August 25, 1978, in record of this proceeding from Illinois Attorney General Scott to Ellen Silberstein). There has been no indication in the record that Teledyne accepts this responsibility, or that the State of Illinois would take title to the 168 acres here involved, so that it may be licensed.

[2/] Applicant premises its motion on a purported 10 year delay of the Staff (Motion p. 1). The Applicant does not detail that it did not file an environmental report or apply for a license for the 168 acres where it seeks to bury more waste until December 30, 1976. It did not formally withdraw constraints foreclosing the processing of its application until September 7, 1977. What Applicant applied for in 1968 was a renewal of its 1967 license. That license continues in effect, and all areas where waste could be buried under methods allowed in the original license have been filled to capacity. Applicant was not harmed by any delay in processing.

FOOTNOTE CONTINUED ON NEXT PAGE

The first license allowing wastes to be buried on the 20-acre Sheffield site until August 31, 1968, had been granted to Applicant's predecessor on August 1, 1967. (Affidavit of M. Bell). That license specified particular methods of burying waste on the 20 acre site. An application to extend the term of that license was filed on August 16, 1968. By operation of law,[3/] the application for extension was deemed to extend

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[2/] FOOTNOTE CONTINUED FROM PRECEDING PAGE

In Public Service Co. of Oklahoma, et al. (Black Fox Station, Units 1 and 2), ALAB-505, 8 NRC ___ (slip op. 7-10, November 2, 1978), counsel for the Applicant there was called to task for leaving an impression in motion papers of unwarranted Intervenor delays, by not mentioning all material facts. The Appeal Board stated:

> . . . this much can be said: the failure of the applicants to have referred to these developments was inexcusable. Counsel appearing before this Board (as well as other NRC adjudicatory tribunals) have a manifest and iron-clad duty of candor. That obligation is hardly fulfilled when, as here, there is a failure to call attention to facts of record which, at the very least, cast quite a different light upon the substance of arguments being advanced by counsel. We shall expect that in the future, applicants' counsel will take pains to avoid this kind of conduct. (Footnote omitted).

The Applicant's counsels in premising a motion on a purported 10 year delay, and not detailing that Applicant did not file its application for the only area where it now seeks to bury more waste until December 31, 1976, and that it did not perfect that application until September 7, 1977, have not fulfilled their duties of candor to this Board.

[3/] Section 9(b) of the Administrative Procedure Act, 5 U.S.C. §558(b) provides in part:

> When the licensee has made timely and sufficient application for a renewal or a new license in accordance with agency rules, a license with reference to an activity of a continuing nature does not expire until the application has been finally determined by the agency.

Section 2.109 of the Rules of Practice of this Commission, 10 CFR §2.109, provides:

> If, at least thirty (30) days prior to the expiration of an existing license authorizing any activity of a continuing nature, a licensee files an application for a new license for the activity so authorized, the existing license will not be deemed to have expired until the application has been finally determined.

the license until the application was acted upon. The application for renewal has never been acted upon and is still pending (Id.). However, as the license was deemed not to have expired, the Applicant continued to bury waste under that license and was not foreclosed from burying waste until all areas available under the original license were full (Id.).

On May 23, 1975, Applicant applied for an approval to permit it to construct burial trenches (Trenches 14 and 14A) in a different manner than that allowed in the original license, in its original 20 acre area. This approval was granted on December 22, 1975 (Affidavit of M. Bell). On August 30, 1976, Applicant requested a license amendment to allow it to use trenches 14 and 14A for the burial of low level waste, and this amendment after extensive review by the NRC technical staff was granted on January 6, 1977 (Id.). Licensed capacity of the site was full in April, 1978 (Id.).

In the interim, after its formation, the NRC, in July 1975, asked the Applicant for an up-to-date license renewal application and environmental report for its original 20 acre site (Affidavit of M. Bell). It was in these documents, submitted some 18 months later on December 30, 1976, that Applicant first asked the NRC to license the additional 168 acres (Id.).[4/] Thereafter, on August 5, 1977, Applicant applied for another amendment to allow it to construct other trenches to bury more nuclear waste on the original 20-acre site, in a different manner than allowed in the original license (Id.). The NRC technical staff, with Applicant's concurrence, limited its review to a Trench 15 (Id.). Notice of this application for

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4/ As we have indicated this application was not in a form for full consideration until September 7, 1977, because Applicant had classified so much of the data therein as proprietary information.

Trench 15 was published on January 6, 1978 (43 FR 1160). After extensive NRC review, the Applicant withdrew this request for approval of Trench 15 separately, but did not withdraw its request for permission to use additional trenches to bury more waste on the original 20 acre site generally (Id.). Apparently, it is this request to bury more waste on the 20 acres site that Applicant notes that it is withdrawing at p. 14 of its Motion).

In processing the August 5, 1977, application to allow additional burial on the original 20-acre site and the December 30, 1976, renewal application which included burial on the adjacent 168 acres, the Staff has propounded certain questions under 10 CFR 2.102 to the Applicant. The NRC Staff does not believe that Applicant has supplied enough information to evaluate the application and to prepare a draft environmental impact statement or a safety evaluation (Affidavits of M. Bell, O. Thompson, S. Wastler and G. Turi and W. Bivins). Among particular areas of Staff concern are those involving:

- hydrology
- geotechnical engineering
- geology
- consideration of alternative sites.

The Staff's review of low-level waste disposal applications, such as NECO's, to a large extent centers on the first three areas of concern listed above. As Sheldon Meyers, then Director of Fuel Cycle and Material Safety, Office of

Nuclear Material and Safeguards, testified before the Environment, Energy and Natural Resources Subcommittee of the House Committee on Government Operations on February 23, 1978:

> . . . the geohydrologic suitability of a given site is governed by a complex series of interactions; including climate, hydrology, subsurface geology, permeability, porosity, sorptive potential, seismic potential, and the geologic history of the area. Field investigations of sites coupled with laboratory measurements are utilized to establish parameters to model the potential velocity and direction of waste movement. A factor tending to increase the movement of radionuclides is availability of circulating groundwater. A factor tending to decrease the movement of nuclides is a high ion exchange capacity in the soil. In the gechydrologic models, no credit is allowed for the packages in which the wastes are buried; only the geologic medium is credited with the containment of the wastes. The models are then used to calculate possible concentrations of nuclides at given site boundaries. Reasonable assurances must be established that the calculated concentrations will always be well below the maximum concentration limits tabulated in 10 CFR Part 20, Standards for Protection Against Radiation.

See also contractor's report on Screening of Alternative Methods for the Disposal of Low-Level Radioactive Waste, NUREG/CR-0308, 1978, p. 39.

In the review of Trench 15 it came to the NRC Staff's attention that the sand lenses underlying the site were extensive and could be continous (Affidavits of O. Thompson, and G. Turi and W. Bivins).[5/] This was discussed with Applicant in

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5/ In footnote 8 of the motion at page 12 of the Motion, Applicant makes an unverified statement that the U.S. Geological Survey believed that the site would retain radionuclides even if the sands at the site were continous. This is not so. The U.S.G.S. presumed the opposite. See affidavits of Thompson, and G. Turi and W. Bivins.

February, 1978, and Applicant agreed to provide further information (Id.). In May 1978, the Applicant and Staff agreed that this further information was inconclusive on the extent of the sand lenses (Id.). In these premises, the Staff has conservatively assumed that the lenses are continous. This potentially would allow migration of radionuclides off site in excess of values permitted in 10 CFR Part 20 (Affidavits of M. Bell, and G. Turi and W. Bivins).

Applicant argues at p. 12-14, that it was recognized that no further study was to be made of the question of sand lenses under the 168-acre site after the July 25, 1978 meeting with the Staff. This is belied by its submittal sent to all parties on August 25, 1978, of a Law Engineering Testing Company Report which attempts to show that the reported sands underlying the 168 acre site are not continous. However, this report only contains raw data, and as set out in the August 15, 1978, answer to Staff question A-2, which Applicant sent to all parties, these test results should be integrated into a comprehensive stratagraphic report covering all Sheffield areas:

> On August 25, 1978, NECO submitted to the Staff the results of the second phase of our investigation. This portion of the study was directed toward an overall investigation of the 168-acre expansion area. In this phase of the study, the history and origin of the sandy material in the expansion area was developed. This investigation indicated that extensive deposits of continuous sands do not exist on the expansion area except in recent alluvial deposits along the stream which crosses the site.
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> The final phase of the study being conducted by NECO involves the characterization of the sand lenses beneath the 20-Acre site in the same manner as was done for the expansion area. This, along with the results of the previous study phases, will be integrated into a comprehensive stratigraphic report on the site. [Attachment 1].

The answer further states the report integrating all three phases of the investigation including the investigation of the 168-acre site was to be submitted by December 1, 1978. (See Affidavit of O. Thompson). Lack of continuity of sand lenses must be substantiated by a stratigraphic analysis evaluating the logs of the borings and not just by such logs alone (Id.).[6/] The Staff did not blind itself to consider such an analysis of only the smaller site without considering the larger one.

Submissions by Applicant of May 12, 1978, and September 20, 1978, raised further questions concerning the licensability of the 168-acre site as they showed the site to be underlain by shale (Affidavits of O. Thompson, and G. Turi and W. Bivins). Such siting would violate one of the basic criteria for low-level shallow land burial because of the potential for radionuclide migration and the complexities of estimating radionuclide transport in that situation (Id.).[7/]

6/ This analysis is required by 10 CFR 20.302(a) which provides:

> The application should also include an analysis and evaluation of pertinent information as to the nature of the environment, including topographical, geological, meteorological, and hydrological characteristics; usage 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.

See also 10 CFR §§2.102, 2.108, 51.20, 51.40(a).

7/ The existence of a chemical waste site adjacent to the Applicant's proposed nuclear waste site, has also raised additional questions on the migration of radionuclides. (Affidavits of O. Thompson, and G. Turi and W. Bivins).

Further, Applicant has not submitted other required geologic information (Affidavit of S. Wastler). Such information is necessary to evaluate whether faulting can provide a radiologic pathway into ground water. This information has been sought from Applicant since at least December 1977 and has not been submitted (Id.).

It has been emphasized to Applicant that its environmental report must discuss alternative sites, including possible new sites, so that the Staff could prepare a draft environmental impact statement. On June 16, 1978, the Applicant wrote to the Director of Material Safety and Safeguards stating:

> The established NRC policy, as stated in AEC letter dated January 16, 1974 to All Agreement States signed by S. H. Smiley, Deputy Director for Fuels and Materials, Directorate of Licensing, of non-proliferation at disposal sites effectively preclude the application of certain other Power Reactor Criteria. [Attachment 5]. 8/

The NRC Director of Fuel Cycle and Material Safety replied on June 27, 1978:

> Your letter [of June 16, 1978] expressed your company's opinion that the staff's consideration of alternate site locations is inappropriate. Let me point out that the National Environmental Policy Act (NEPA) requires that an Environmental Impact Statement (EIS) include all reasonable alternatives to the proposed action. It is our judgment that reasonable alternatives to the proposed action include expanding another existing site or establishing a new burial site, if a superior site is available. We believe that our EIS would not meet the requirements of NEPA if this alternative were not addressed. We request that, in advance of the appeal meeting, you provide us with the bases for your view that an analysis of alternate sites should not be made in this case. [Attachment 6].

8/ The letter referred to, of January 16, 1974 [Attachment 2], from the Deputy Director for Fuel and Materials did not set forth such a policy. It states:

FOOTNOTE CONTINUED ON NEXT PAGE

On July 6, 1978, the Chief of the Low Level Waste Branch, of NRC wrote to Applicant:

> As indicated in our letter to you of June 27, 1978 the NRC staff considers that the alternative of establishing a new site rather than expansion of the Sheffield site is a reasonable alternative that needs to be considered in our Environmental Impact Statement (EIS). Accordingly, enclosed are requests for additional information related to this issue that the staff requires before we can complete our EIS. [Attachment 7].

On July 18, 1978, the Applicant wrote to the Director of Fuel Cycle and Material Safety, stating:

> We wish to make clear that NECO has made no studies, analyses or systematic screening of potential new sites in the mid-continent area since the Sheffield site was selected, primarily because of the Commission's moratorium policy. [Attachment 8].

8/ FOOTNOTE CONTINUED FROM PRECEDING PAGE

> . . . it seems clear that prior to allowing any new sites to be established a fairly rigid review of the economic impact on the new site on existing sites is necessary.

In Commission policy statements of December 7, 1977, 42 FR 61904, the Commission stated:

> The NRC will accept applications for new shallow land burial grounds and will treat them in the ordinary course of business with the need for additional capacity being demonstrated on a case-by-case basis. [Attachment 3].

The policy was reiterated on October 25, 1978 (43 FR 49811) [Attachment 4].

As indicated in the self-serving minutes[9/] attached to Applicant's motion the Applicant met with the Director of the Office of Nuclear Material and Safeguards in attempting to convince the NRC an examination of alternatives for the Sheffield site was not necessary in the environmental impact statement. It continues to be the position of the NRC Staff that a discussion of alternative sites is necessary in the EIS considering the Sheffield facility.[10/]

ARGUMENT

I. There Is No Basis For The Board To Order The Staff To Issue A Draft EIS By A Set Date.

In Offshore Power Systems (Floating Nuclear Power Plant), ALAB-489, 8 NRC ___, ___ (slip op. 25 August 21, 1978), the Appeal Board vacated

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9/ The minutes, in large measure, do not reflect the NRC Staff's recollection of the conference. However, they do correctly indicate that the need to discuss alternatives was addressed at the meeting. A NRC Staff position on whether the NRC Staff might consider alternatives, absent such consideration by the Applicant, has not been reached.

10/ At several places in Applicant's motion former Staff counsel is accused of mischaracterizing the record or misrepresenting the NRC Staff position (Motion, see pp. 2, 7, 11). These attacks on the integrity of Staff counsel have no place in a brief before this Commission on the merits of a proceeding. See Northern Indiana Public Service Co. (Bailly Generating Station, Nuclear-1) ALAB-204, 7 AEC 835, 837-838 (1974); ABA Code of Professional Responsibility Ethical Consideration 7-37. We ask that those entire pages be stricken from the Motion. See Louisiana Power and Light Co. (Midland Plant, Units 1 and 2), ALAB-417, 5 NRC 1442, 6 AEC 319 (1973); Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-417, 5 NRC 1442, 1445-1446 (1977).

an order of a Licensing Board ordering the Staff to produce environmental documents by a set date, stating:

> a Licensing Board may direct the staff to publish its environmental documents by specific dates if, after affording the parties--including the staff-an opportunity to be heard on the matter, it finds that no further delay is justified. In the present case, however, the decision to fix a firm date for filing the documents demanded does not rest on any such finding. In the circumstances, . . . scheduling the staff's submission of environmental documents may not stand.

The Staff has not been afforded an opportunity to be heard. Prehearings sought by the Staff and the Intervenors have not been held because of objections of the Applicant. (See orders of April 19, 1978 and September 1, 1978).[11/]

The Applicant is the movant and seeks the order here. It thus has the burden of proof. 10 CFR 2.743. It must show that the Staff had the duty claimed, and that the Staff did not perform that duty. It cannot be assumed the Staff did not perform its duty. Without producing evidence

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11/ It is further noted that disputes over who caused a delay could not be decided by affidavit, but require a hearing. As stated in Offshore, supra, at 56:

> We think it inappropriate and unnecessary for us to attempt to resolve this dispute. Inappropriate because the matter is before us on certification and, hence, without the benefit of a record in which the question was fully explored. Trial by affidavit is not an adequate substitute. We are thus in no position to decide "who struck John."

of the alleged unjustifiable delays, Applicant cannot prevail. See Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 7 NRC 741, 752-754 (1977). As we discuss below no basis exists for a finding of delay, let alone an unjustifiable delay, on the part of the NRC Staff.

The Appeal Board also stated in Offshore, supra at p. 22:

> We do not mean that the Board may force the staff to file the final environmental statement on a set day if, when that day comes, the statement is not finished or the staff is dissatisfied with its substance. An order to that effect would be self-defeating. It could at best elicit a questionable statement; it would also trench on the staff's right to prepare a document up to its own standards of adequacy. . .

As we have indicated, the Staff has very serious questions about the adequacy of the proposed site. Those questions, as we detailed, include whether the sands underlying the site will lead to the transport of radionuclides in violation of our regulations; whether shale underlying the site will similarly cause a more rapid transport of radionuclides along the rock, on the surface of the rock, or through fissures in the rock than previously assumed; whether the radionuclides will interact with material deposited in an adjacent chemical waste storage facility causing the nuclides to move at a faster rate than previously presumed; and whether there are faults in the area allowing the migration of the radionuclides through fissures. See 10 CFR 20.302(a). The Staff's

concerns are supported by affidavit. No basis exists for the Board to determine that the Staff is not acting reasonably in wanting the information sought before issuing its technical documents. See Cleveland Electric Illuminating Co., supra.

The Applicant started out its motion by talking of a 10 year delay. But as we have already shown, the application for the permission Applicant now seeks involving the 168 acre site was first sought on December 30, 1976, and not made available for full consideration until August 19, 1977. The Applicant has not been harmed by lack of action on its request for license renewal, as that license continues in effect, and Applicant has been allowed to fill the original 20 acre site according to the terms of the original license. A 16 month time to consider a difficult application on the area where Applicant seeks to expand its operations is not a ten year delay.

As no unreasonable Staff delay has been shown, the Board cannot grant the Applicant's motion to compel the Staff to prepare its environmental document by a set date.

II. Any Delay In The Issuance Of The Draft EIS Has Been Caused By The Applicant.

In the attached affidavits and documents, we show the following:

- The Applicant did not file an environmental report on any part of its renewal application or seek permission to use the subject 168-acre site until December 30, 1976 (Affidavit of M. Bell).

- The Applicant did not formally remove the proprietary classification of data in portions of its environmental report until September 7, 1977, preventing publication of notice of the availability of the environmental report in the Federal Register (Affidavit of M. Bell).

- The Applicant's Motion to Defer Prehearing Conference of April 19, 1978.

- The Applicant's failure to resolve questions involving sand lenses beneath the site (Affidavits of O. Thompson, and G. Turi and W. Bivins).

- The Applicant's failure to properly answer geologic questions on faults (Affidavit of S. Wastler).

- The Applicant's failure to provide a site development plan and method of operation until September 20, 1978.

- The Applicant's failure to consider siting alternatives.

- The Applicant's failure to deal with coal beds (Affidavit of S. Wastler).

- The Applicant's failure to properly deal with regional geologic structures (Id.).

- The Applicant's failure to deal with radionuclide transports in coal seams (Id.).

- The Applicant's opposition to holding pretrial of August 28, 1978.

- The Applicant's failure to give notice of withdrawal of its application to bury more waste on the 20-acre site until this time.12/

12/ This list is not complete.

As shown by these affidavits and documents, it is plain that substantial delay in this proceeding has been caused by the Applicant, and particularly its failure to fulfil its duty of supplying the NRC Staff with the information needed to prepare the draft environmental statement or the safety evaluation on any part of the application. See 10 CFR §§2.102, 2.108, 20.302(a), and 51.40(a).

III. The EIS Must Consider Alternative Sites To Sheffield.

The National Environmental Policy Act of 1969 (NEPA), section 102(2)(C), 42 U.S.C. §4332(2)(C), requires that federal agencies consider the environmental consequences of "all major federal actions significantly affecting the quality of the human environment." The statute expressly requires that the federal agency consider alternatives to the proposed action which may be environmentally preferable,[13] and courts have found this consideration of alternatives to be the linchpin of a NEPA analysis. Monroe County Conservation Society, Inc. v. Volpe. 472 F.2d 693, 697-98 (2d Cir. 1972). A primary focus of the Staff's NEPA review of the Sheffield application must be upon alternatives to the action. Even if the proposed action is clearly cost-beneficial and even if the environmental consequences

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[13] Section 102(2)(C), 42 U.S.C. §4332(2)(C), requires that the impact statement address "alternatives to the proposed action." Section 102(2)(E), 42 U.S.C. §4332(2)(E), requires that federal agencies "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

could be further reduced without unacceptable offsetting costs.[14/] It is within this legal context that the NRC's analysis of alternative sites must be conducted in this case.

The courts have laid down a rule of reason with respect to the impact statement discussion of alternatives. Natural Resources Defense Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972). This rule of reason does not, however, preclude discussion of an alternative merely because it is contrary to policy, or because it would involve administrative difficulty, or because implementation is dependent upon action by another agency or official, Natural Resources Defense Council v. Morton, supra, at 834, or because it requires the agency to take radically new approaches, Montgomery v. Ellis, 364 F. Supp. 517, 526 (N. D. Ala. 1973), or because it would take time to implement. See Green County Planning Board v. FPC, 455 F.2d 412, 423 (2d Cir., 1972); Carolina Environmental Study Group v. United States, 510 F.2d 796, 801 (D.C. Cir. 1975).[15/] The impact statement discussion of alternatives must make clear the reasons for the

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[14/] As we have previously shown it is not yet established that the action proposed is environmentally acceptable. See EDF v. Corps of Engineers, 492 F.2d 1123 (5th Cir. 1974).

[15/] See also Counsel on Environmental Quality Guidelines, 40 CFR §§1500.1, 1500.8(a)(4).

agency's choice, e.g. Rankin v. Coleman, 394 F. Supp. 647 (8th Cir. 1976), address the environmental effects of the alternatives, David v. Coleman, 421 F.2d 661, 681 (9th Cir. 1975), compare them, Natural Resources Defense Council v. Callaway, 524 F. 2d 79, 83 (2nd Cir. 1975), and respond to the recommendations of responsible critics, Environmental Defense Fund v. Froehlke (Cache River), 473 F.2d 346 (8th Cir. 1972).

The need for a detailed analysis of alternative sites in an impact statement is well established by Commission precedents. See e.g., Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503 (1977); Boston Edison Company, et al. (Pilgrim Nuclear Generating Station, Unit 2), ALAB-479, 7 NRC 774 (May 25, 1978): Florida Power & Light Company (St. Lucie, Unit No. 2), ALAB-435, 6 NRC 541 (1977). Indeed, it has been stressed that the determination of whether an application should be rejected because there is some other site at which the facility ought to be located is the Staff's "most important environmentally related task" and that no other environmental question is so significant in terms of the ultimate outcome. Pilgrim, ALAB-479, supra at 7 NRC 791, citing with approval St. Lucie, supra, ALAB-435, 6 NRC at 543.

The cases cited immediately above involve alternative site analysis for nuclear reactors rather than waste disposal facilities. This difference does not, however, absolve the Staff from the legal duty to consider and evaluate alternative sites for waste disposal facilities. Whenever

environmental considerations are involved in the siting of a project that significantly affects the environment, NEPA requires the agency involved to take a "hard look" at whether there is some other location where the project ought to be located. See e.g., Monroe County Conservation Society, Inc. v. Volpe, supra (highways); Hanly v. Kleindienst, 471 F. 2d 823 (2nd Cir. 1972), cert. denied, 412 U.S. 908 (1973), (jails); Trinity Episcopal School Corp. v. Romney, 523 F.2d 88 (2nd Cir. 1975) (public housing). It does not matter whether the Applicant, a subsidiary of Teledyne, is a public utility or a private company; alternative sites must be considered as long as a major federal action significantly affecting the quality of the environment is involved, i.e., approval of the project.[16] See, e.g. Kleppe v. Sierra Club, 427 U.S. 390 (1976) (issuance of coal leases to private companies and approval of mining plans.

16/ The fact that the Applicant in this case does not have a "service area" defined by a public utility commission, as do public power utilities, cannot possibly be used as a justification for not considering alternate sites. Generally, agencies must consider all reasonable alternatives. The alternative's location is one factor to be considered in determining whether it is reasonable. As an application of this general rule, environmental impact statements covering nuclear reactors built by public utilities have not been required to include a study of alternate sites outside the applicable "service area." The absence of a clearly defined service area in this case simply precludes limiting the geographic scope of the Staff's analysis to a "service area;" it does not have any effect, however, on the general rule that the agency must consider all reasonable alternatives. In any event, it should be noted that Applicant has justified its facility as serving a particular area, alternative location must be looked in that area, in addition to transport of the waste to Hanford, Washington, Beatty, Nevada, and Barnwell, South Carolina.

Moreover, the Staff cannot rely on the existence of the full 20-acre site at Sheffield to absolve it of a duty to analyze alternative sites.[17/] The adjacent 168-acre site for which the Applicant seeks approval would increase the acreage at Sheffield, Illinois, by a factor of more than eight. We must at least look at other sites to serve the Sheffield market to see if any are "obviously superior."[18/]

The Applicant's argument that the policy of non-proliferation of waste disposal sites precludes the Staff from considering alternative sites is without merit. First, there is no such policy.[19/] As we have detailed

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17/ Alternative site analysis has been required in cases where an applicant seeks to add additional reactors at a site where reactors have already been located. See, e.g., Pilgrim, ALAB-479, supra.

18/ At page 14 of Applicant's motion it talks of looking at "cow pastures" to find alternative sites. That is not what is required. What is required at a minimum is a serious environmental study to see if there are sites in the area whose hydrologic, geologic and geotechnical engineering characteristics are less likely to cause the transport of radionuclides than the subject site. Applicant also states that some unnamed person in NRC told them in August 1976 that a study of alternative sites was not necessary. The NRC regulations provide that alternatives need be discussed in accordance with CEQ Guidelines. 10 CFR §§51.1(a), 51.20(a), 51.40(a). Those Guidelines require rigerous examination of alternatives which might avoid adverse environmental effects. 40 CFR §1500.8(a)(4). Moreover that informal advice, if provided, was given prior to any focusing on the proposed eight-fold expansion of the size of the site, the proposed changed method of burial, and knowledge of the geologic, geotechnical engineering and hydrologic problems with the site.

19/ See fn. 8, supra.

the Commission policy statement of December 7, 1977 (42 FR 61904), provides that application for new low level waste disposal sites will be considered in the "ordinary course of business" and individually licensed on a showing of need. This was reiterated just this autumn in the Commission notice on the development of low-level waste regulations, where the Commission again stated that it will continue to review low-level waste disposal site applications under existing regulations, until those new regulations are promulgated (43 FR 49811, October 25, 1978). While, non-proliferation may be a factor which the Staff should consider in an analysis of alternative sites, it is not the only factor which must be considered and certainly does not preclude a consideration of alternative sites in this case. Therefore even if there were such a policy as Applicant claims, alternative sites for the Sheffield facility would still have to be examined.[20] In sum, given the current state of the law, an environmental impact statement with a thorough analysis of alternative sites is required.[21]

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[20] Beyond the legal requirement that the Staff evaluate alternate sites, there is the reality that the adequacy of the Staff's analysis of alternative sites promises to be one of the most hotly contested issues in this case. For example, the State of Illinois, a party to the case, contends that there has been inadequate consideration given to selection of a site at a more desirable location in terms of geology, hydrology, rainfall, humidity and population density.

[21] Intervenor, Chicago Section, American Nuclear Society, maintains that while alternatives should be looked at, only presently licensed low-level waste disposal sites need be considered as alternatives because of a purported policy of the Commission not to license new sites. As we show there is no such policy. Alternatives must be considered in the region served by the Sheffield facility, whether or not such sites now exist.

IV. The Board May Not Prohibit The Staff From Considering Alternative Sites In A Draft EIS.

It is in the first instance for the Staff to determine the content of an environmental impact statement. 10 CFR §§51.20-51.26; Vermont Yankee Nuclear Power Co. v. NRDC, 435 U.S. 519, 526 (1978). Absent some conflict with Commission policy, a Licensing Board has no authority to circumscribe that environmental review. See Offshore Power Co., supra at 52. As stated in Texas Utilities Generating Co. (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-260, 1 NRC 51, 56 (1975) and quoted in Offshore, supra at 13:

> the FES stands as the product of the study made by that segment of the agency which has the specific function of ferreting out the baseline facts upon which the final environmental judgments required by NEPA must be made. That being so, it necessarily is a prime ingredient in the ultimate fashioning of the agency's NEPA determinations by the adjudicatory tribunals.

See also Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-76-17, 4 NRC 451, 462 (1976); Boston Edison Co. (Pilgrim Nuclear Generating Station, Unit 2), supra at 7 NRC 792-794; Northeast

Nuclear Energy Co. (Montague Nuclear Power Station, Units 1 and 2), LBP-75-19, 1 NRC 436, 437 (1975); New England Power Co. (NEP Units 1 and 2), LBP-78-9, 7 NRC 271, 278-280 (1980).[22]

Contrary to what Applicant asserts, there is no conflict with Commission policy which prevents looking at alternative sites to Sheffield. Nothing indicates that the Staff is not to consider alternative sites. The most that is said in the 1974 letter from a Deputy Director of Fuels and Materials, which Applicant says contains this policy, is the statement that ". . . prior to allowing any new sites to be established as fairly rigid review of the economic impact of the new site on existing sites is necessary." By its language it says that new sites may be licensed, and thus new alternatives considered. Moreover, as we have indicated, the Commission policy statements of December 7, 1977 and October 25, 1978 (42 FR 61904 and 43 FR 49811) state that new sites, and thus alternatives to existing sites, will be considered.

The affidavits submitted herewith show that it cannot presently be said that the burial of more waste at Sheffield is licensable. The original site is full under the terms of its license. Before allowing waste in the adjacent 168-acres, alternative sites which would serve the same function as the

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[22] No intimation is made concerning instances where unreasonable Staff delays not based on health and safety, or environmental concerns, are proved.

Sheffield facility must be evaluated. Regardless of whether such review is required by NEPA or the Commission's regulations, this Board has no authority to stop the Staff from engaging in such a study, and publishing its results in the draft EIS.

CONCLUSION

The motion to compel filing of the EIS and to prohibit the consideration of alternative sites therein must be denied:

- As there was no Staff delay;
- As there was no unreasonable Staff delay;
- As consideration of alternatives is required by law; and
- As the Board has no authority to limit the Staff's considerations of alternatives.

Respectfully submitted,

Edwin J. Reis
Assistant Chief Hearing Counsel

Dated at Bethesda, Maryland
this 1st day of December, 1978

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
NUCLEAR ENGINEERING COMPANY, INC.	)	Docket No. 27-39
	)	
(Sheffield, Illinois Low-Level Radioactive Waste Disposal Site)	)	

AFFIDAVIT OF MICHAEL J. BELL

Michael J. Bell, being first duly sworn, deposes and says:

1. I am Chief of the Low-Level Waste Branch of the Division of Fuel Cycle and Material Safety of the Nuclear Regulatory Commission (NRC). The statements made herein are based upon my knowledge, and information available to me in my official capacity.

2. Through my official duties I have become acquainted with the licensing actions, health and safety determinations, environmental procedures, and administrative proceedings undertaken by the Nuclear Regulatory Commission in its regulation of the low-level waste burial facility operated by Nuclear Engineering Company, Inc. (NECO) near the town of Sheffield, Illinois.

3. Although NECO has been operating under a timely renewal for 10 years, the application for site expansion has been pending for less than two years. The following chronology addresses the question of elapsed times.

4. Site Approval: The first burial on the 20 acre site was authorized by a license amendment issued to NECO's predecessor (California Nuclear) on August 1, 1967. The existing license already authorized burial at the Hanford commercial site and waste collection services and was due to expire August 31, 1968.

5. Renewal Application: NECO filed an application for renewal on August 16, 1968. In accordance with the Administrative Procedures Act and the Commission's regulations, NECO's license has not expired pending final action by the government. NECO continued to operate under this license as amended, until the site was filled in April 1978.

6. Compacted Fill: On May 23, 1975, NECO filed an application for a license amendment which would permit use of the excess soil excavated from the trenches for the construction of compacted fill trenches in topographic depressions on the Sheffield site. On December 22, 1975, NECO was authorized to construct compacted fill trenches but not to bury any radioactive waste in them. On August 30, 1976, NECO applied for a license amendment to permit use of two compacted fill trenches -- Trenches 14 and 14A. An amended application was filed on November 4, 1976, and was supported with a Radiological Control and Safety Manual, a Site Operations Manual, a Radiological Assessment Evaluation for Trenches 14 and 14A, and a report on the Geology and Geotechnical Engineering for Trenches 14 and 14A. The amendment application was

extensively reviewed by NRC's technical staff and NECO responded in detail to several sets of technical questions. Amendment No. 11 approving the new manuals and authorizing burial in Trenches 14 and 14A was issued on January 6, 1977.

7. Expansion and Environmental Report: Following its formation in January 1975, the NRC requested, in July of 1975, an up-to-date license application and an environmental report (ER) regarding the Sheffield site. NECO filed these documents 18 months later on December 30, 1976. The documents included for the first time a request for site expansion to 188 acres. In addition, NECO applied for the withholding of proprietary information in its application and environmental report pursuant to 10 CFR 2.790(b).

8. Proprietary Request: NECO's request for proprietary withholding included parts of the ER essential to assessing the environmental impact of the site. Since the ER, and other documents, must be available to the public, this request delayed certain aspects of the environmental review. In an August 19, 1977 meeting with NECO, a mutually acceptable withholding was negotiated and confirmed by NECO's letter dated September 7, 1977. Notice of availability of the ER and of the opportunity to request a hearing was then published on December 5, 1977 (42 FR 61523).

9. Interim Capacity: The two demonstration trenches, Trenches 14 and 14A, approved in January 1977 were not expected to assure sufficient capacity for NECO to continue operations while the renewal/expansion application was reviewed and an environmental impact statement prepared. On August 5, 1977, NECO applied for a license amendment to permit use of compacted fill trenches which would be built on its present site by the same method used for Trenches 14 and 14A. The NRC limited its consideration of this application to only one trench -- Trench 15. Notice of this application and of an opportunity for comment was published on January 6, 1978 (43 FR 1160). The Trench 15 application underwent extensive safety review by NRC technical staff. No final decision was reached before the application for interim capacity was withdrawn by NECO by letter dated April 19, 1978. NECO indicated unfavorable economics in the face of dual hearings which would be required to pursue separate interim authorization. Licensed capacity in trenches 14 and 14A was filled in April 1978.

10. Summary of Chronology: While the license renewal application has been under review for almost ten years, the application for site expansion was submitted less than two years ago. Site capacity was not exhausted until April 1978.

11. Criteria for Site Suitability: NRC's approach to determining the geohydrologic suitability of a site was summarized in testimony by Sheldon Meyers, before the Environment, Energy, and Natural Resources

Subcommittee of the Committee on Government Operations on February 23, 1978:

"...the geohydrologic suitability of a given site is governed by a complex series of interactions; including climate, hydrology, subsurface geology, permeability, porosity, sorptive potential, seismic potential, and the geologic history of the area. Field investigations of sites coupled with laboratory measurements are utilized to establish parameters to model the potential velocity and direction of waste movement. A factor tending to increase the movement of radionuclides is availability of circulating groundwater. A factor tending to decrease the movement of nuclides is a high ion exchange capacity in the soil. In the geohydrologic models, no credit is allowed for the packages in which the wastes are buried; only the geologic medium is credited with the containment of the wastes. The models are then used to calculate possible concentrations of nuclides at given site boundaries. Reasonable assurances must be established that the calculated concentrations will always be well below the maximum concentration limits tabulated in 10 CFR Part 20, Standards for Protection Against Radiation."

The staff believes that the natural characteristics of the site should afford clear assurance that concentration of nuclides in off-site effluents will not exceed the unrestricted limits in 10 CFR 20. Because of uncertainties in pathway analyses and the diffuse rather than discrete character of groundwater releases, staff believes that the basic safety of the site should be assured without reliance on institutional controls and engineering measures. Institutional controls and engineering measures provide an additional margin of safety and should be employed to assure that releases are as low as is reasonably achievable (ALARA).

12. Calculation of Potential Leachate Concentrations: Trench leachates are the source term used in groundwater transport calculations to determine the acceptability of the proposed site. In the transport

calculations, the capability of the natural properties of the site to prevent significant off-site release of this leached activity is considered.

Although wastes that have been disposed at the site are generally solids, water may be released as the wastes age and moisture may enter the trench as rainwater which percolates through the trench cap. The water which becomes contaminated as it contacts the wastes, is termed trench leachate.

The staff believes that radionuclide concentrations in leachates from wastes in proposed new trenches in the expansion area at Sheffield can be expected to exceed 10 CFR 20 limits for release to unrestricted areas. Key factors in predicting the concentrations of radionuclides in leachate are: the waste composition, the availability of water, rate of radioactive decay and the leachability of the radioactive waste.

The staff considered 3 cases for predicting radionuclide concentrations in expansion area trenches. Case I is based on the applicant's projected inventories of radioactive wastes and leaching model. Case II employs waste inventories which were derived from a model of the growth of the various waste shippers in the Sheffield service area, assuming continuation of past administrative practices to limit the specific activity of wastes, and leach rates derived by the NRC staff. Case III utilized the same staff leach rates as Case II with inventories of wastes based on unlimited specific activities and considering wastes

from decommissioning of nuclear power plants.

The concentrations of a number of important nuclides predicted to be present in expansion area trench leachates are listed in Table 1 for these three cases. Each concentration is given as a multiple of the concentration limits of 10 CFR 20, Appendix B, Table II, Column 2. For example, in the case of the tritium concentration predicted using the applicant's proposed analysis, the predicted tritium concentration is 2.7 times the limit specified in 10 CFR 20 for release to unrestricted areas.

Wastes already buried on the licensed 20 acre site do not represent an imminent threat to the public health and safety. Concentrations of radionuclides in leachates and environmental samples have not yet exceeded 10 CFR Part 20. However, concentrations are expected to increase as containers corrode and on continued exposure to water. Staff calculations of leachate concentrations are more conservative for the 20 acres than for the expansion area because, with the exception of Trench 18 where the groundwater has risen above the trench bottom, trenches do not have standing water to soak the wastes. Precipitation filtering through the wastes but not accumulating in the trench is expected to leach at lower rates but staff is not able to quantify how much less.

13. LLW Staff Position on Site Expansion: Based on 1) the site data supplied to date; 2) the applicant's proposed site utilization

plan; and 3) the hydrological and geotechnical [redacted] of NRR staff, LLW staff is unable to conclude that the [redacted] easonable assurance that the public health and safety is protected, given the site expansion plan as now proposed by the applicant.

The presence and properties of shale were not considered in the applicant's proposed site development and radionuclide transport modeling. Although the location of trench bottoms with respect to the shale is not clear from information submitted for some trenches, the planned bottom of most trenches appear to be either into hard shale or ten feet or less from shale. Thus, as orally communicated to the applicant, the presence of shale raises questions about the proposed site utilization plan for essentially the entire expansion area. The model for the trench infiltration and leaching of radioactivity from the waste described in paragraph 12 is reasonable for any humid eastern site such as Sheffield. In light of the above, staff are not able to demonstrate that the applicant's proposed site development plan meets the criteria described in paragraph 11 and cannot recommend licensing of the expansion area as proposed.

TABLE 1

Leachate Radionuclide Concentrations as multiples of 10 CFR 20 Appendix B, Table II, Column 2.*

Isotope	Case I	Case II	Case III
Tritium	2.7	6.7	105.
Carbon-14	.0053	4.2	15.
Cobalt-60	1.5	4.6	41.
Strontium-90	10.	N.E.	3600.
Iodine-129	.0018	111.	510.
Cesium-137	6.5	N.E.	9800.
Radium-226	.6	134	1100.

(N.E. - not estimated)

*estimated at 10 years after trench closure.

Michael J. Bell

MICHAEL J. BELL, Chief
Low-Level Waste Branch
U.S. Nuclear Regulatory Commission

COUNTY OF MONTGOMERY)
) SS
STATE OF MARYLAND)

Subscribed and Sworn to before me

this the 29th day of November, 1978.

Anne K. Baron Anne K. Baron

NOTARY PUBLIC

My Commission expires

July 1, 1982

United States of America
Nuclear Regulatory Commission

Before the Atomic Safety and Licensing Appeal Board

In the Matter

Nuclear Engineering Company, Inc. Docket No. 27-39

(Sheffield, Illinois Low-Level
Radioactive Waste Disposal Site)

Joint Affidavit of Gale P. Turi and
William S. Bivins

Gale P. Turi and William S. Bivins, being duly sworn, depose and say:

1. I, Gale P. Turi, am a hydraulic engineer on the staff of the Hydrologic Engineering Section of the Hydrology-Meteorology Branch, Division of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation. I am a reviewer of the hydrologic engineering aspects of the Sheffield Low Level Radioactive Waste Disposal Facility.

I, William S. Bivins, am a hydraulic engineer and Section Leader of the Hydrologic Engineering Section of the Hydrology-Meteorology Branch, Division of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation. I am a reviewer of the hydrologic engineering aspects of the Sheffield Low Level Radioactive Waste Disposal Facility.

2. We have examined the Nuclear Engineering Company "Motion to Compel Filing of Draft Environmental Impact Statement," dated November 2, 1978, and have submitted this affidavit in relation thereto. Paragraphs 3 through 8 discuss the transport analysis done for the 20-acre site that is currently licensed. Paragraphs 9 through 13 discuss the 168-acre expansion area. Paragraph 14 discusses the staff's current actions in evaluating the possible effects that chemical wastes, being buried adjacent to the site, might have on radionuclide migration.

3. During our review of Trench 15 of the Sheffield Low Level Waste Disposal Facility in about December, 1977, we received additional information that indicated that the sand lenses at the 20-acre site were extensive and possibly continuous. Prior to that time the staff had assumed that the sand lenses were small and discontinuous. The actual extent of the sand lenses at and near the site significantly affects the rate of migration of radionuclides. Therefore, we requested the applicant to provide additional information on the extent of the sand lenses. At a meeting on February 13, 1978 the applicant presented an outline of its proposed investigations to determine the extent of the sand in the 20-acre site.

4. The results of the applicant's analysis of the extent of sand lenses were submitted for our review May 10, 1978. The staff agreed with NECO that the analysis was inconclusive with regard to the extent of the sand lense.

5. Since the staff has been unable to conclude that the sand lense in the site area are not continuous (see Affidavit of Owen Thompson), we have conservatively evaluated radionuclide migration from the

20-acre site assuming the sand lenses to be continuous and to extend offsite.

6. Footnote 3 of the Motion by Nuclear Engineering Company, Inc. to Compel Filing of Draft Environmental Impact Statement is misleading. (Note there appears to be a typographical error in the seventh line of the footnote. We assume it should read "... if the sands were continuous.") It is the staff's opinion that the U.S.G.S. report did not assume that the sands at the site might be continuous. Specifically the U.S.G.S. report page 109 states the following.

> Logs of test holes A-D drilled by California Nuclear at and near the site (Cal. Nuclear, November 18, 1966, appen. F) indicate that the flacial sediments are 50-60 feet thick and that they consist mainly of silt and clay, but also contain interbedded sand and sandy silty gravel. The glacial sediments are complexly bedded, and individual units are not considered to persist for more than short distances. (Emphasis Added)

7. Radionuclide migration from the 20-acre site was evaluated using (1) ground water velocities determined by the applicant as a result of the field tests conducted during February and March, 1978, (2) equilibrium distribution coefficients based on information requested in a February 13, 1978 meeting by the staff and submitted by the applicant May 10, 1978, (3) a source term for the 20-acre site provided by NUS based on their inventory of wastes buried at Sheffield, (4) and leach rates provided by the Low-Level Waste Branch.

8. The results of the staff migration analysis from the 20-acre site show that the radionuclide concentrations offsite exceed the concentrations set forth in 10 CFR Part 20, Appendix B, Table II, Column 2.

9. In March 1976 we received a copy of both the Safety Analysis Report for Sheffield Low Level Radioactive Waste Disposal Facility and the Environmental Report for Sheffield Low Level Radioactive Waste Disposal. We noted and informed the applicant that information was missing on the details of the planned utilization of the facility and the anticipated layout of trenches, their sizes and orientations. Not until September 20, 1978, did the applicant provide a complete response to our question. At that time the applicant provided information on the proposed elevation of trench bottoms.

10. Based on information on the elevation of the trench bottoms and borings taken in the 168-acre site, it was determined that the applicant was proposing to locate some of the trench bottoms in the shale bedrock. (See Affidavit of Owen Thompson.)

11. Further, based on the information provided, the staff is unable to conclude that the shale bedrock beneath the trenches would not be faulted and/or fractured (see Affidavit of Sandra Wastler). Such a zone could be assumed to provide a direct pathway for liquids in the trenches to offsite locations.

12. Based on an analyses done by the staff, the radionuclide concentrations in the trench leachate could exceed limits set forth in 10 CFR Part 20, Appendix B, Table II, Column 2 (see Affidavit of Michael Bell). Assuming the (1) radionuclide migration through the fracture zone and (2) the trench leachate described above, we are not able to conclude that the radionuclide concentrations offsite would not exceed limits set forth in 10 CFR Part 20, Appendix B, Table II, Column 2.

13. Further, one of the basic principles of siting criteria for low level shallow land burial is violated, namely that trenches not to be located at or near bedrock. The following reasons provide the basis for this principle.

- Water moves readily through fractures in bedrock and traditional permeability testing does not adequately identify rates of flow.
- Flow paths through the fractured media are undefined with regard to direction and rates. Therefore, modeling of transport is not practicable.
- Bedrock fractures furnish little opportunity for sorption of radionuclides.
- If the bedrock is not fractured and forms a relatively impermeable layer, ground water entering the trench will remain. Thus, the trench fill will become saturated, leeching of radioactive material is increased, and new pathways (e.g., plant uptake) are enhanced.

The following documents discuss the undesirability of locating trench bottoms in or near bedrock.

- Peckham, A.E. and Belter, W. G., "Considerations for Selection and Operation of Radioactive Waste Burial Sites." Second Conference Proceedings of Ground Disposal of Radioactive Waste Conference, U. S. Atomic Energy Commission, Washington, D. C., March 1961.

- Cherry, J.A., Grisak, G.E., and Jackson, R.E., 1973, "Hydrogeological Factors in Shallow Subsurface Radioactive Waste Management in Canada." Proceeding International Conference on Land for Waste Management, Ottawa, Canada, October, 1973.

Siting criteria in these two reports have been widely cited in recent reports on burial of low-level radioactive wastes by such authorities as U.S. Environmental Protection Agency and the National Research Council.

14. On June 15, 1976, W. Bivins and G. Turi visited the Sheffield site. At that time we noted a chemical waste site adjacent to the low-level radioactive waste disposal site. We had previously questioned the applicant about the possible effects that chemical wastes could have on the migration of radionuclides. At a visit in July 24, 1978, it appeared that chemical wastes were being buried upgradient of the

radioactive waste disposal site, and we again questioned the applicant on the effects of the chemicals on radionuclides. In October 1978, the Illinois Environmental Protection Agency provided us with the location of some of the chemical waste trenches. Based on these location and ground water contours extrapolated from the radioactive waste site, we conclude that the chemical wastes are upgradient of the radioactive waste site. The interaction of chemical and radioactive wastes can lead to a more rapid movement of buried radionuclides offsite and might present significant safety issues. Applicants statements that the excavated area "is being completely filled with compacted soil" in conformance with an Illinois Environmental Protection Agency Permit does not lessen the concern at the present time.

Gale P. Turi

Gale P. Turi, Hydraulic Engineer
Hydrology-Meteorology Branch, DSE
Office of Nuclear Reactor Regulation

William S. Bivins

William S. Bivins, Hydraulic Engineer
Hydrology-Meteorology Branch, DSE
Office of Nuclear Reactor Regulation

Subscribed and sworn to before me
this 29th day of November, 1978

Marilyn Gallanosken

My Commission Expires July 1, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the matter of	)	
Nuclear Engineering Company	)	Docket Number 27-39
(Sheffield Low-Level Waste Disposal Site)	)	

AFFIDAVIT OF SANDRA L. WASTELR

Sandra L. Wastler, being first duly sworn, do hereby depose and say:

1. I am a geologist, Geosciences Branch, Division of Site Safety and Environmental Analysis, the Office of Nuclear Reactor Regulation. I am responsible for the geologic and seismic safety review of the license renewal and expansion proposed to the Sheffield low-level waste disposal site. In this position I received a request to review the geology and seismology of the Sheffield site on March 11, 1977.

2. On August 5, 1977, I was requested to review the geologic and seismic data specific to Trench 15. NECO wanted the NRC to permit continuing waste burial during licenses expansion and renewal beginning with Trench 15. It was not possible to separate the review of Trench 15 from that of the entire site and to continue my review I would therefore, need responses to the acceptance review questions.

3. On December 19, 1977, I attended a meeting with NECO to discuss Trench 15. I reiterated the need for the responses to my acceptance review questions particularly the questions with regard to faulting in order to review either the Trench 15 or the entire license expansion and renewal area. At that time, NECO indicated that they would provide all the requested information including:

   (a) The age of last movement on faulting within the site and surrounding region and the basis for the age determination;

   (b) An integrated discussion of the existing data, field geologic mapping, geophysical surveys, aerial photographs and test borings used to conclude that no faulting existed in the site area.

   (c) A discussion of the regional geomorphic lineaments, as defined by Saunders and Hicks (1976) in the vicinity of the Sheffield site incorporated into the aerial photograph discussion.

   (d) A copy of the 1976 communication with Bergstrom indicating the Illinois State Survey's support of NECO's conclusions.

   To date, I have not received adequate replies to this request.

4. On January 1, 1977, NECO submitted an inadequate response to the acceptance review questions on faulting. No additional data was provided. To date, the applicant has not provided an integrated discussion of the evidence supporting their contention that there is no faulting in the site area.

5. On February 13, 1978, I attended a meeting with NECO at which time I once again reiterated my concerns with respect to the faulting issue.

6. The faulting questions were again reissued as Round 1 questions.

7. On or about May 12, 1978, I received from NMSS a copy of a letter from T. S. Baer, Vice President of NECO to Michael Bell outlining NECO's negative views on the Round 1 questions. NECO's letter outlined the proposed program necessary to answer the Round 1 Questions, the estimated cost to answer the Round 1 questions and gave the rationale behind NECO's determination that the questions were not germane to the review of their license application.

8. On September 7, 1978, I received another inadequate response to the Round 1 questions on faulting. The applicant provided only a list of references, not the data nor an integrated discussion supporting the basis for their conclusion contained in the SAR that there are no faults in the site area.

9. At this point in the review, based on the data presented by the applicant and my past experience I can make the following conclusions:

(a) The Sheffield site is located within the Central Stable Region tectonic province. This province is generally characterized by gentle arches, domes and basins which formed during the Paleozoic Era more than 225 million years ago. Faulting was widespread in the Central Stable Region during that Era and the discovery of faulting within Paleozoic rocks is not unexpected. There is no known geologic evidence of tectonic deformation or faulting in the region subsequent to that time. Based on the tectonic history of the Central Stable Region the absence of historic seismicity in the site vicinity and general knowledge of regional structure, I have a high degree of confidence that there are no large faults passing under the site which are of regional extent and that the local faults beneath the site if they exist are geologically old and pose no potential hazard to the site.

(b) I do not have site specific information to conclude that there are no faults in the site area. The faulting question is mainly a hydrologic concern as a radiologic pathway

into the regional groundwater table. At this point in the review, the lack of data sufficient to show the lack of faulting in the bedrock surface would require the staff to assume that faulting exists in the immediate site area.

10. In order to complete the review the NRC staff still requires the following types of information:

(a) A complete discussion of all evidence to support the statement in the SAR that there are no faults in the site area. All field maps should be presented. A list of references is not sufficient.

(b) A site area fault investigation conducted over a 5 mile radius from the site. A discussion confined to the 168 acre site is not sufficient.

(c) A discussion of the aerial photographs referenced in the SAR and any lineaments found in the site area with regards to the safety of the low-level waste disposal site.

(d) A sufficient number of borings logs to show that the shale unit immediately underlying the site area is unfractured and to contour the top of the #7 coal in the site area. A discussion of mining data combined with NECO and Law Engineering data should be included.

This list is not complete.

Sandra L. Wastler

Sandra L. Wastler, Geologist
Geosciences Branch, DSE
Office of Nuclear Reactor Regulation

Subscribed and sworn to before me
this 29th day of November, 1978.

Marilyn Jollenstein

My Commission Expires July 1, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
NUCLEAR ENGINEERING COMPANY, INC.	)	Docket No. 27-39
	)	
(Sheffield, Illinois Low-Level Radioactive Waste Disposal Site)	)	

AFFIDAVIT OF OWEN O. THOMPSON

Owen O. Thompson, being first duly sworn, deposes and says:

1. I am a Geotechnical Engineer, Geotechnical Engineering Section, Geosciences Branch, Division of Site Safety and Environmental Analysis. I am the reviewer of geotechnical engineering aspects of the Sheffield Low Level Waste Disposal Facility.

2. I have examined the Nuclear Engineering Company "Motion to Compel Filing of Draft Environmental Impact Statement," dated November 2, 1978, and submit this affidavit in relation thereto.

3. The results of the studies submitted to date by the applicant concerning the continuity of sand lenses have been acknowledged by the applicant to be inconclusive, but it should be noted that the inconclusive results apply to the 20 acre site. For this reason, it has not been determined whether or not continuous sand lenses underlie the 20 acre site.

4. For the 168 acre site adjacent to the 20 acre site, the lack of continuity of sand lenses has not been adequately substantiated at this time by the applicant.

5. Studies of the 168 acre site were made by Law Engineering ~~and~~ Testing Company and submitted to the NRC on August 25, 1978, in a report which contained:

- logs of borings
- a tabulation of borings showing where sand was encountered
- a conclusory opinion that the sand is not continuous, which in my opinion is unsubstantiated

6. Since the conclusion regarding the 168 acre site is unsubstantiated, I expect the applicant to provide a comprehensive stratigraphic report evaluating the raw data which shows sand materials encountered in the borings as listed in the Law Engineering and Testing Company report. I expect the stratigraphic report will attempt to substantiate the presently unsubstantiated conclusion that the sand is not continuous in the 168 acre site. I also expect that the report will provide the applicant's conclusions regarding the sand lenses in the 20 acre site.

7. My expectation that a comprehensive stratigraphic report will be provided is based on the applicant's response to question A-2, contained in a letter from T. S. Baer, to M. J. Bell, NRC, dated September 8, 1978, wherein it is stated:

> "The final phase of the study being conducted by NECO involves the characterization of the sand beneath the 20 acre site in the same manner as was done for the expansion area. This along with the results of the previous study phases, will be integrated into a comprehensive stratigraphic report on the site.

The letter further stated:

> . . . . "We anticipate a final report incorporating the three phases of the study, to be completed by December 1, 1978."

It is my understanding that "previous study phases" were an initial study of the 20 acre site (wherein inconclusive results were obtained) and the Law Engineering and Testing Company study of the 168 acre site submitted on August 25, 1978.

8. Without this comprehensive stratigraphic report, due December 1, 1978, I cannot determine if the applicant's conclusion regarding the non-continuous nature of the sand has any substantiation for the 168 acre site. I also cannot evaluate the "inconclusive" conclusions regarding the 20 acre site other than to recommend that the worst condition should be assumed, that is, that sand lenses are continuous.

9. The applicant at page 11-13 of its motion argues that as of August 15, 1978

> "the staff of the Commission understood that
> (1) no further studies of the 168 acre site would be submitted prior to the issuance of the DES and
>
> (2) that the DES would be issued without further studies." (page 15)

This is not true. The staff and applicant both knew that as of August 15, 1978, that the Law Engineering and Testing Company was making further studies of the 168 acre site for the applicant.

The results of these studies were actually submitted to the NRC staff on August 25, 1978.

10. The foregoing discussion shows that the applicant has not shown and substantiated the position at footnote 8 of its motion, pages 12-13 that

> "reports - - - acknowledged by the staff in Question A-5 (sic) have shown that sand lenses are not continuous at the site except possibly in a small portion of the existing 20 acres".

It is presumed that the reference is to Question A-2 of the letter dated August 15, 1978 from C. V. Smith, NRC, to J. N. Neel, NECO wherein the May 10, 1978 response by NECO was discussed. This discussion related only to the 20 acre site and thus the above quoted statement is misleading. The Applicant's conclusions regarding the 168 acre site were not presented until the report by Law Engineering Testing Company was submitted to NRC by letter, dated August 25, 1978, from T. S. Baer, NECO, to M. J. Bell, NRC.

11. The applicant at footnote 8, page 12-13 of its motion, further argues that

> "this issue was resolved more than 10 years ago."

The U. S. Geological Survey report titled Review of Geologic and Hydrologic Conditions at a Proposed Site for Burial of Solid Radioactive Waste, Southwest of Sheffield, Bureau County, Illinois, by Elmer H. Baltz, dated July 1967, presented a conclusion on page 124 as follows:

> "the site near Sheffield, Illinois appear(s) to be suitable for burial of low level solid radioactive wastes in undisturbed glacial sediments above the water table if precautions are taken in constructing and filling the burial trenches and monitoring the possible underground movement of radioactive materials that might be leached from the buried wastes.
>
> The data derived from the pumping tests indicate that the glacial sediments have generally low permeabilities."

It is my opinion that the Baltz report did not contemplate burial in sand or high permeability materials, or in loess, and certainly not in shale, and the report was prepared for the 20 acre site only. The issue was resolved 10 years ago only if trenches are to be constructed in glacial till of low permeability. Data accumulated over the past years show that this is not the case for the 20 acre site and will not be the case for the 168 acre expansion area.

12. There are many other questions involving the suitability of the site for the burial of nuclear waste. From material submitted by the applicant on May 12, 1978, and September 20, 1978, it appears that the applicant intends to extend trench bases into bedrock. This new consideration raises significant geotechnical engineering questions that I expected will impact other review areas such as hydrology and radionuclide migration rates. In addition there are questions involving the site capacity, availability of fill material, steepness of permanent slopes and other areas.

13. In sum, the preceeding discussion indicates some of the remaining issues which preclude completion of my review of the application for use of the 168 acre Sheffield site.

Owen O. Thompson

Subscribed and sworn to before me
this 24th day of November, 1978.

Notary Public

My Commission Expires: January 1, 1982

Question A-2 8/15/78

Provide us with whatever program you have for demonstrating that the sand lens beneath the site is not continuous and is not a pathway for rapid offsite migration.

Response

The NECO program for evaluation of the significance of the sand lenses beneath a portion of the Sheffield site has been ongoing since the February 13, 1978 meeting between NECO and the NRC Staff. On May 10, 1978, NECO submitted a report on a study of the sands in the 20-Acre portion of the site. This report presented field data relating to the areas of occurrence of sands in this area, the results of hydraulic testing of the sandy materials encountered, and laboratory data relating to hydraulic and chemical properties of the sands and other site soils.

On August 25, 1978, NECO submitted to the Staff the results of the second phase of our investigation. This portion of the study was directed toward an overall investigation of the 168-acre expansion area. In this phase of the study, the history and origin of the sandy material in the expansion area was developed. This investigation indicated that extensive deposits of continuous sands do not exist on the expansion area except in recent alluvial deposits along the stream which crosses the site.

The final phase of the study being conducted by NECO involves the characterization of the sand lenses beneath the 20-Acre site in the same manner as was done for the expansion area. This, along with the results of the previous study phases, will be integrated into a comprehensive stratigraphic report on the site.

The Phase III investigation on the 20-Acre site will consist of a re-examination of USGS and Daily and Associates borings by NECO and its consultants. Additional borings on the 20-Acre site are not anticipated unless such borings are required to fill significant informational voids which appear during the study.

Mineralogy data obtained by the USGS and the ISGS will be considered in discussions of geologic history and stratigraphy.

The USGS has consented to our examination of their soil samples and the use of their laboratory in our studies.

At the present time, NECO does not anticipate additional in-situ field testing to obtain additional measurements of hydraulic properties of site materials. However, additional testing will be performed should any information voids develop during the study.

NECO expects to commence the final phase of the study as discussed above in mid- to late-September. Additional field borings or testing as required will be completed by early November. We anticipate a final report, incorporating the three phases of study, to be completed by December 1, 1978.

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

ATTACHMENT 2

JAN 16 1974

All Agreement States

You may recall during our recent Agreement State meeting that several State representatives described problems they have encountered regarding attempts by industry to develop commercial waste burial sites in their States. The concern about unnecessary proliferation of sites seemed unanimous and comments about how this potential problem could be controlled were requested from the AEC.

As you know, there are six commercial land burial sites in the U. S. They are located in New York, Kentucky, South Carolina, Illinois, Nevada, and Washington. All are regulated, in whole or in part, by Agreement States except the Illinois site which is solely regulated by AEC. All but one are located on land owned by the State (the Hanford, Washington site is owned by the Federal Government but leased to the State) and leased to the commercial site operator. The lease conditions vary but all contain some provision for establishing a fund for perpetual care.

Regardless of whether or not these six sites have sufficient capacity to meet the projected waste disposal requirements over the next decade, it seems clear that prior to allowing any new sites to be established a fairly rigid review of the economic impact of the new site on existing sites is necessary. It would serve little purpose if a new site were licensed resulting in the closing of an existing site in a nearby State which had been operating in a satisfactory manner.

Under the AEC regulations to implement NEPA, an application for the establishment of a commercial burial site under AEC regulatory jurisdiction must include an environmental report filed by the applicant. The report must include a detailed assessment of the potential impact of the facility on the environment, consideration of alternatives including the alternative of not proceeding with the proposed facility, and a cost-benefit analysis wherein the benefit of the proposed project is balanced against the cost to the environment. This analysis would take into account the economic and environmental impact of a new site on those already in existence.

The provisions of NEPA do not apply to State actions. To resolve problems of proliferation, however, we recommend that the States require applicants for commercial burial site licenses to complete a full environmental report including the detailed cost-benefit analysis. Your evaluation of these data should resolve questions on the need for the new site and its impact on existing sites.

We would be pleased to provide assistance to you on matters regarding an environmental report, specifically including help on the economic analysis. I have enclosed a copy of proposed 10 CFR 51 to illustrate the type of information necessary for an environmental report. We ask your cooperation in this matter. We would appreciate hearing from you by February 15, 1974 concerning the implementation of this recommendation.

Sincerely,

S. H. Smiley, Deputy Director
for Fuels and Materials
Directorate of Licensing

Enclosure:
cpy proposed 10 CFR 51

42 FR 61904
Published 12/7/77

LOW-LEVEL WASTE DISPOSAL

Comments on Task Force Report (NUREG-0217) and Statement on Implementation of Regulatory Program for Low-Level Waste Management

This Notice presents: (1) A brief summary of the public comments on NUREG-0217, "NRC Task Force Report on Review of the Federal/State Program for Regulation of Commercial Low-Level Radioactive Waste Burial Grounds" (FR 42 13366-13370, March 10, 1977; FR Doc. 77-7198); and (2) a statement on implementation of the NRC regulatory program for low-level waste management.

As part of a reexamination of the technical and regulatory basis for low-level waste management, the Nuclear Regulatory Commission published NUREG-0217, "NRC Task Force Report on Review of the Federal/State Program for Regulation of Commercial Low-Level Radioactive Waste Burial Grounds" in March 1977. This report presented the Task Force findings and recommendations on the programs of NRC and the States for regulating the disposal of commercial low-level wastes. The body of the report was also published in the FEDERAL REGISTER on March 10, 1977 (42 FR 13366) to solicit public comments which would be considered in the Commission's deliberation on the Task Force recommendations and in developing an NRC low-level waste management program.

The concerns of the Task Force in making the recommendations in NUREG-0217 were:

The need to establish a regulatory structure for low-level waste disposal;
The need to avoid site proliferation;
The need to assure adequate capacity;
The need to assure long-term care without placing a large or inequitable burden on the few States in which burial grounds are located;
The need to assure the Congress and the public that an adequate and fully coordinated program for low-level waste disposal exists;
The need for State participation;
The need for coordination of Federal and State activities; and
The need for a thorough examination of alternative disposal methods.

From its findings, the Task Force made the following recommendations:

I. The NRC should initiate action in cooperation with appropriate Federal and State agencies to increase Federal control over the disposal of low-level waste by:

a. Requiring: 1. Joint Federal/State approval of new disposal sites;

2. NRC licensing, with State participation, of current and new disposal sites; and

3. Federal ownership of land for all disposal sites.

b. Establishing a Federally administered perpetual care program.

II. The NRC, in cooperation with appropriate Federal and State agencies, should accelerate development of the regulatory program for the disposal of low-level waste which includes regulations, standards, and criteria.

III. The NRC should initiate immediately the necessary studies to identify and evaluate the relative safety and impacts of alternative low-level waste disposal methods. No new disposal sites should be licensed until a full examination of alternative disposal methods has been completed or unless an urgent new need is identified. The NRC should assure effective use of existing commercial burial grounds.

SUMMARY OF PUBLIC COMMENTS

Thirty-three responses were received from Governors, State agencies, industry representatives, and other interested parties. Copies of the comments and a detailed staff analysis of the comments may be examined at the Commission's Public Document Room at 1717 H Street, Washington, D.C., and the staff analysis may be examined at the Commission's Local Public Document Rooms. Single copies of the staff analysis, which is being published as NUREG-0217, Supp. 1, are available to the extent of supply from the U.S. Nuclear Regulatory Commission, Division of Technical Information and Document Control, Washington, D.C. 20545. Copies are also available for sale from the National Technical Information Service, Springfield, Va. 22161.

Comments on Recommendation I for increased Federal control varied from mild agreement or tacit acceptance to well-developed positions in support of continuing the existing Federal/State roles. Those who [illegible] with the recommendation generally reiterated the conclusions of the Task Force. Many commenters agreed with the conclusion that a better regulatory program is needed but questioned the recommendation that Federal control is the best solution. The comments recognized the need for active involvement of the States in low-level waste management to satisfy their vested interests in protecting the health and safety of their citizens and in land use decisions. While no conclusive reasons to alter Task Force Recommendation I were given, the comments indicated the need to develop a broader base of technical support before adopting the recommendation.

All commenters agreed with Recommendation II (development of a regulatory program) and part of Recommendation III (study of alternative disposal methods). If anything, their comments strengthened the case for Recommendation II. Comments on the remainder of Recommendation III (no licensing of new sites) questioned the assumptions of the Task Force regarding waste volume projections and available disposal capacity. They also indicated that additional factors (e.g., regional distribution) should be taken into account before implementing the recommendation.

STATEMENT ON IMPLEMENTATION OF

NRC Regulatory Program for Low-Level Waste Management

Task Force Recommendations. In considering the Task Force recommendations, NRC analyzed the policy matters addressed by the Task Force in preparing NUREG-0217, the public perceptions as reflected in the comments, and information gained from the comments of the ACRS, discussions at several public meetings, and additional analyses of low-level waste management. The NRC plans, based on this analysis, follow.

Increased Federal Control. The Commission has taken the Task Force recommendation for increased Federal control over low-level waste disposal under consideration but has not formally adopted it yet as NRC policy. The NRC believes that a number of unresolved questions should be answered before a final decision on this recommendation is made. Further, there is no compelling need to make a final decision on reassertion of Federal control at this time, since the States are adequately protecting the public health and safety. The NRC is studying the remaining issues surrounding this Task Force recommendation and the NRC low-level waste management program described later will provide a solid foundation for making a final decision.

Standards Development and Alternatives Study. The NRC and all commenters agree that there is an urgent need to establish a regulatory program to develop a comprehensive set of standards and criteria for low-level waste disposal and to examine alternatives to shallow land burial. The NRC low-level waste management program will include development of a comprehensive regulatory framework and an examination of alternative disposal methods.

Licensing of New Sites. As recommended by the Task Force, any new burial grounds will be fully justified on the basis of need. The NRC will accept applications for new shallow land burial grounds and will treat them in the ordinary course of business with the need for additional capacity being demonstrated on a case-by-case basis. The reevaluation of Task Force Recommendation III reaffirmed the uncertainties in the waste volume generation and disposal capacity projections in the Task Force report. Additional capacity may be needed due to regional needs, equipment limitations, costs, and other factors. Pending completion of ongoing studies, the staff believes that the environmental impact from any new site which might be licensed, if properly sited and operated, will be small. Applications for new burial sites will be treated by the NRC in the ordinary course of business with the need for additional capacity being demonstrated on a case-by-case basis. The NRC would expect the Agreement States to treat applications for new burial sites they may receive in a similar manner.

Low-Level Waste Program. The NRC low-level waste management program includes development of a regulatory framework, evaluation of alternative disposal methods and supporting research. The program emphasizes early results, utilization of NRC in-house resources, and cooperation with Federal and State agencies. Research efforts are being coordinated with DOE, EPA, the USGS, and numerous State agencies.

Among the elements of the program are the following major activities:

1. Waste Classification Regulation;
2. Alternatives to Shallow Land Burial Study;
3. Standards for Shallow Land Burial;
4. Standards for Alternative Methods;
5. Shallow Land Burial Regulations and Guides;
6. Alternative Methods, Regulations, and Guides.

The program which is being published as NUREG-0240 may be examined at the Commission's Public Document Room at 1717 H Street, Washington, D.C. and at the Commission's Local Public Document Rooms. Single copies are available to the extent of supply from the U.S. Nuclear Regulatory Commission, Division of Technical Information and Document Control, Washington, D.C. 20545. Copies are also available for sale from the National Technical Information Service, Springfield, Va. 22161.

[7590-01-M]

NUCLEAR REGULATORY COMMISSION

[10 CFR Part 61]

MANAGEMENT AND DISPOSAL OF LOW-LEVEL WASTES BY SHALLOW LAND BURIAL AND ALTERNATIVE DISPOSAL METHODS

Advance Notice of Proposed Rulemaking

AGENCY: U.S. Nuclear Regulatory Commission (NRC).

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Nuclear Regulatory Commission has underway development of a specific regulatory program for management of low-level radioactive wastes. It is anticipated that the regulations will initially cover only the currently practiced method of shallow land burial. Alternative disposal methods would be added as acceptable criteria are developed. The purpose of this notice is to invite advice, recommendations, and comments on the scope of the environmental impact statement (EIS) for proposed new 10 CFR Part 61 and on the alternative waste disposal methods that may eventually be incorporated into the new regulation.

DATE: Comment period expires December 26, 1978.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of the Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received by the Commission may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT:

Dr. Michael J. Bell, Chief, Low-level Waste Branch, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301-427-4240.

SUPPLEMENTARY INFORMATION: On December 7, 1977, the Nuclear U.S. Regulatory Commission published a notice "Comments on Task Force Report (NUREG-0217) and Statement on Implementation of Regulatory Program for Low-level Waste Management." The program was published as NUREG-0340.

Recent developments at the six commercially operated shallow land burial sites have highlighted the need for an explicit regulatory program for shallow land disposal of low-level wastes and for disposal of such wastes by alternative disposal methods. Two of the six licensed commercial burial grounds (West Valley, N.Y. and Maxey Flats, Ky.) are closed. A third site (Sheffield, Ill.) is filled to its licensed capacity. A contested application for expansion of Sheffield is currently under review. The State of South Carolina has placed a limit on the volume of waste that may be buried each month at a fourth site (Barnwell, S. C.). The Commission believes that development of those parts of its program dealing with regulation of alternative methods of disposal of low-level wastes should be accelerated, since such alternatives offer means of providing additional disposal capacity. The staff had informal inquiries concerning requirements for licensing of such facilities, and expects that an application for such a facility may be forthcoming.

The low-level waste program provides for development of proposed regulations for disposal of low-level wastes by shallow land burial by 1980, and development of proposed regulations for disposal of low-level wastes by at least one alternative disposal method by 1981. NRC currently licenses operation of commercial shallow land burial under the provisions of parts 20, 30, 40, 51, and 70 following the procedures in 10 CFR Part 2. Part 20 requires that land burial sites be on Federal or State owned land and outlines factors to be addressed when evaluating proposed disposal procedures. Parts 30, 40, and 70 contain general rules governing licensing of by-product source, and special nuclear material respectively. These regulations require the submission of an environment report as part of an application for commercial waste disposal by shallow land burial. Through 10 CFR Part 51, NRC implements the requirements of the National Environmental Policy Act of 1969 in its licensing process. Licensing decisions are based on a case-by-case evaluation.

The procedures in part 2 include requirements to furnish involved State and local government copies of the application, FEDERAL REGISTER notification of receipt of an application, participation, and involvement of State and other interested and effected per-

ties in the licensing process and the opportunity for an impartial hearing to review all pertinent issues through the licensing process. As stated in this notice, NRC recognizes the need for and plans to develop more explicit criteria and regulations for LLW management.

To provide guidance to the staff on alternative disposal methods to be considered, the U.S. Nuclear Regulatory Commission has contracted with Ford, Bacon & Davis Utah, Inc. to perform a study of potential disposal methods. The purpose of the study is to identify viable disposal methods and to submit to further detailed study alternative methods determined on the basis of a preliminary screening effort. Based on the contractor's findings and a review by a Technical Advisory Panel, the U.S. Nuclear Regulatory Commission has identified as the candidates for detailed study the following alternatives: Emplacement of wastes in engineered structures, disposal of wastes in ocean waters, emplacement of wastes in mined cavities (existing mines or mines dug specifically for waste disposal), and burial of wastes at an intermediate level (e.g., 30 feet of cover as compared to 4-6 feet of cover for shallow land burial). The contractor has recommended that modifications to current shallow land burial practices should also be considered. The contractor is submitting these alternatives to further study. The study is expected to be completed by November 1978, and the U.S. Nuclear Regulatory Commission plans to publish the results as soon as possible following completion of the study. Preliminary results of the study to date will be published shortly as NUREG/CR-0308. Copies of the report may be examined at the Commission's Public Document Room at 1717 H Street N.W., Washington, D.C., and at the Commission's local public document rooms. Single copies of the report may be obtained without charge, to the extent of supply, by writing to the Division of Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. After existing stock is exhausted, copies are available from the National Technical Information Service, Springfield, Va. 22161, at current rates.

Advice, recommendations, and comments on the development of this regulation are invited from all interested persons. Specific comments are requested on the following questions:

1. Proposed New 10 CFR Part 61. The Commission has concluded that an environmental impact statement should be prepared pursuant to the National Environmental Policy Act on its actions to develop more explicit criteria and regulations for low-level waste management. The Commission plans initially to consider the environmental impact of low-level waste disposal alternatives and of technical criteria for disposal of radioactive wastes by shallow land burial. An environmental impact statement will be prepared to provide an essential part of the information and decision base for the criteria and rulemaking action. What significant issues should the Commission consider and analyze in depth in the environmental impact statement? What issues are not significant, or are covered or may be covered in another environmental review, and therefore may be eliminated from analysis in this enviromental impact statement? Within this statement, what should the criteria be to distinguish among viable and nonviable alternatives? Do we know enough about certain disposal options to make an informed decision at this time? Should waste segregation be applied to low-level wastes (e.g., separate disposal sites for nonfuel cycle wastes)?

2. Is it desirable to develop explicit criteria and standards for the disposal of low-level wastes? If so, what should be the general format and content of the criteria and standards?

3. What should be considered in developing the criteria for waste performance; site suitability, design, and operations; site monitoring; site decommissioning, postoperational maintenance, and funding? Are there other areas where criteria are needed?

4. What are the advantages and disadvantages of the four alternatives described above? Which of the alternatives should be given the greatest priority in development of regulations?

5. Are there viable alternatives, other than the four alternate methods identified above, which should be further considered in the development of the U.S. Nuclear Regulatory Commission's program? (Those which have been considered were noted earlier in this notice and are discussed in greater detail in NUREG/CR-0308.) If so, what is the basis (technical, economic, social, etc.) for considering an additional alternative as a potential candidate?

6. What should be the extent of each State's responsibility for management of the low-level wastes generated by operations within its borders?

The Commission would appreciate any other comments on the development of it's program.

Dated at Washington, D.C., this 18th day of October 1978.

For the Nuclear Regulatory Commission.

SAMUEL J. CHILK,
Secretary of the Commission.

[FR Doc 78-29911 Filed 10-24-78; 8:45 am]

ATTACHMENT 5

Nuclear Engineering Company, Inc.
9200 SHELBYVILLE ROAD, SUITE 526 · P.O. BOX 7246
LOUISVILLE, KENTUCKY 40207 PHONE (502) 426-7160

1978 JUN 20 AM 8 39

USNRC-OELD

June 16, 1978

Dr. Clifford V. Smith
Director Office of Nuclear
Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C. 205[illegible]

Dear Dr. Smith:

In ac[illegible]ed Nuclear Regulatory Commission policy, [illegible]quest a management appeal of certain staff [illegible]to our application for license renewal. Unde[illegible]rstand that you will schedule a meeting as s[illegible]discuss these areas of disagreement, which e[illegible]your staff's wish to apply reactor siting [illegible]low-level waste disposal site at Sheffield.

[illegible]a matter of background, Nuclear Engineering Company, Inc. [illegible]an application for renewal of its license for the operation of the low-level waste disposal site at Sheffield, Illinois in 1968. Subsequently, at the request of the NRC staff following several meetings between the staff and NECO to establish the format and criteria, the licensee resubmitted the application for renewal and expansion of the facility.

In addition, at that time a suggested table of contents for both the Safety Analysis Report and Environmental Report were submitted to the staff. At the final meeting during which the criteria were established, Mr. Singer closed this meeting by stating that it appeared "that the investigative program outlined, in conjunction with the NRC additions, will produce sufficient information for their review of the site." We relied on this commitment.

Nevertheless, after submission of these documents, the staff made numerous requests for additional information during the course of its review.

While NECO has attempted to cooperate with the staff, it has found that to reply to certain questions would impose onerous requirements upon NECO. Included within these type of questions

were:

1. Seismic questions.
2. Site development plan.
3. Alternate site locations.

In addition to expanding, without explanation, the format and criteria for the application established prior to December, 1976, it is our belief that the imposition of onerous requirements and particularly the utilization of reactor criteria for the review of our license is inappropriate for the following reasons:

1. A Low-Level Disposal Site has substantially different seismic and hydrogeologic requirements than does a Power Reactor Site.

2. Individual burial trench design is a dynamic process which may change as new and better techniques are developed. To require detailed trench layout and design 10 to 20 years prior to use cannot be justified.

3. The established NRC policy, as stated in AEC letter dated January 16, 1974 to All Agreement States signed by S. H. Smiley, Deputy Director for Fuels and Materials, Directorate of Licensing, of non-proliferation at disposal sites effectively preclude the application of certain other Power Reactor criteria.

Moreover, there appears to be a diffusion of responsibility and uncertainty as to when and how decisions on our application will be made by the staff. As you know, both NECO and the Commission have been criticized for the time that has been taken on our application. Without regard to the justifiability of these criticisms, the political attacks which have resulted have apparently influenced the staff's attitudes and desire for caution.

For these reasons, we believe that through the informal appeal procedures you will be able to resolve the existing confusion and crystallize the legitimate ends which your staff should employ in completing the review of the application as soon as possible.

Sincerely,

NUCLEAR ENGINEERING COMPANY, INC.

T. S. Baer
Vice President

TSB:db

cc: Attached Service List

ATTACHMENT 6

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

CORRECTED COPY

June 27, 1978

Mr. James N. Neel
President and
Chief Executive Officer
Nuclear Engineering Company, Inc.
9200 Shelbyville Road
Suite 526
P. O. Box 7246
Louisville, Kentucky 40207

Dear Mr. Neel:

I have received Nuclear Engineering Company, Inc.'s (NECO) letter of June 16, 1978 to Dr. Smith requesting a management appeal of staff decisions relating to your application for license renewal and site expansion. Dr. Smith is on foreign travel this week. In addition, before the meeting can take place, arrangements will have to be made to notify the intervenors. Based on these considerations, a meeting could be arranged for the week of July 10, 1978. In any event, I believe it would be useful for me to address several of the points raised in your company's letter.

The staff agrees with NECO that seismic criteria for shallow land burial sites differ from those for reactors and may be less conservative. NECO has apparently misinterpreted the staff's request for information in our letter to you of March 15, 1978. Our request is intended to solicit the data and analyses on which you have based the conclusions in your application. I believe a meeting between our staffs should be held to clarify our request.

The staff also agrees that detailed trench layouts and design 10 to 20 years prior to use is not required. However, the staff does require sufficient information concerning trench capacity, trench construction criteria and future site inventory to evaluate the environmental impact of the waste to be disposed of in the expansion area and the impact on health and safety (including occupational) of the proposed trench construction methods. This information is fundamental to the staff's evaluation of the environmental impact of the site. One purpose of the June 16, 1978 meeting which was cancelled at NECO's request was to clarify our information needs and concerns in this area and we believe that such a meeting is still required.

Enclosure 2

Your letter expressed your company's opinion that the staff's consideration of alternate site locations is inappropriate. Let me point out that the National Environmental Policy Act (NEPA) requires that an Environmental Impact Statement (EIS) include all reasonable alternatives to the proposed action. It is our judgment that reasonable alternatives to the proposed action include expanding another existing site or establishing a new burial site, if a superior site is available. We believe that our EIS would not meet the requirements of NEPA if this alternative were not addressed. We request that, in advance of the appeal meeting, you provide us with the bases for your view that an analysis of alternate sites should not be made in this case.

Please contact Kitty Dragonette, the project manager for the Sheffield case, as soon as possible to arrange a date for a meeting the week of July 10, or thereafter.

Sincerely,

Sheldon Meyers

Sheldon Meyers, Director
Division of Fuel Cycle and Material Safety

cc: Clifford V. Smith, Jr.
Sheffield Service List
J. Blackburn

ATTACHMENT 7

JUL 6 1978

Mr. James N. Neel
President and
Chief Executive Officer
Nuclear Engineering Company, Inc.
9200 Shelbyville Road
Suite 526
P.O. Box 7246
Louisville, Kentucky 40207

Dear Mr. Neel:

As indicated in our letter to you of June 27, 1978 the NRC staff considers that the alternative of establishing a new site rather than expansion of the Sheffield site is a reasonable alternative that needs to be considered in our Environmental Impact Statement (EIS). Accordingly, enclosed are requests for additional information related to this issue that the staff requires before we can complete our EIS. We recognize that Items 1-13 request documentation of existing and past facts, actions, and considerations. No new studies or analyses were intended. Since such is not the case for Item 14, we suggest a meeting to clarify our request and to plan a program to provide sufficient data to enable the staff to determine whether or not an obviously superior site exists.

We note that this area is one of concern and subject of appeal. However, in order to expedite our review and to clarify our needs we are submitting the enclosed questions at this time.

Sincerely,

ORIGINAL SIGNED BY
M. J. BELL

Michael J. Bell, Chief
Low-Level Waste Branch
Division of Fuel Cycle
and Material Safety

Enclosure:
As stated

ALTERNATIVE SITE QUESTIONS

1. Provide a list of those sites considered for low-level radioactive waste disposal by the Nuclear Engineering Company, Inc. or any of its predecessors as alternatives to the Sheffield site.

2. For each alternative site listed in response to question 1, provide all studies of the site made by or on behalf of the applicant or any of its predecessors, and related documents in applicant's possession.

3. For each alternative site listed in response to question 1, give the reasons, if any, the alternative was rejected by the applicant or any of its predecessors.

4. Provide a list of those sites considered by the applicant for low-level radioactive waste disposal as alternatives to expansion of the Sheffield site. Provide a description of each alternative site including the exact location and total acreage.

5. For each alternative site listed in response to question 4, provide all studies of the site made by or on behalf of the applicant and all related documents in applicant's possession.

6. For each alternative site listed in response to question 4, give the reasons, if any, the alternative was rejected by the applicant.

7. Did the applicant consider the use or expansion of any of its other burial sites as an alternative to expansion of the Sheffield site?

8. If the answer to question 7 is yes, specify the facility(ies) considered and give the reasons, if any, for rejection as an alternative. Provide all studies made by or on behalf of the applicant concerning use or expansion of the applicant's other burial sites as an alternative to the Sheffield site and all related documents in the applicant's possession.

9. If the answer to question 7 is no, give the reasons, if any, why this was not considered.

10. Does the applicant contemplate the possibility of operating a new low-level waste disposal facility or of expanding any of its other existing facilities? If the answer is yes, specify the location of the facility(ies), the total acreage, and the disposal capacity.

11. Describe all parcels of land owned by the application or in which the applicant has an interest. Include in the description an exact location and total acreage.

12. Describe all parcels of land for which the applicant has an option to purchase, lease or obtain an interest. Include in the description an exact location and total acreage.

13. Describe all parcels of land for which the applicant has entered into negotiations to purchase, lease, or obtain an interest, or for an option to purchase, lease, or obtain an interest.

14. Expand your consideration of alternative actions to expansion of the Sheffield site to include a systematic screening of potential alternative new sites. Criteria to be used should be submitted for review before you begin your search. Candidate sites should be ranked and the results submitted for review before proceeding with a more detailed examination of the leading sites.

ATTACHMENT 8

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USNRC

July 18, 1978

Mr. Sheldon Meyers, Director
Division of Fuel Cycle &
Material Safety
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 27-39

Dear Mr. Meyers,

In the spirit of your letter of June 27, 1978, I am writing to crystallize to the extent possible the matters which we will discuss in our management appeal meeting with you. We now understand that the meeting will be scheduled for July 25 in order that Dr. Smith may be present. We, of course, regret that this meeting could not be held earlier.

In general, we are pleased with the progress which already appears to have been made concerning the licensing review for Sheffield as a result of our correspondence. However, we believe that further clarification is required, particularly in the area of alternatives, which was the subject of the somewhat contradictory letter dated July 6, 1978, from Dr. Bell to me.

1. Alternatives

You may recall that we met with your staff on August 10, 1976, to discuss the revised application for license which the staff had requested. Regulatory Guide 3.8, as annotated by the staff for applicability to Sheffield, was presented to us as the "standard review plan" for Sheffield. With regard to alternatives, Section 10 to the Regulatory Guide was annotated to request NECO to consider (1) no action, (2) alternate disposal methods at the same site, (3) selection of an alternative site and (4) disposal by means other than burial. Any such analysis should be made promptly by the Commission from information already available to it from studies of disposal sites made by AEC/NRC and the Department of Energy.

At the meeting, these criteria were discussed in the light of the Commission's existing moratorium on any new burial sites.

Accordingly, the development of any such sites could not be considered as a viable alternative and our Environmental Report was prepared accordingly. As we read Dr. Bell's letter, he appeared to understand the basis for our Environmental Report when he stated "no new studies of analyses were intended". On the other hand, the fourteenth question on his most recent list contradicts this point in asking for a "systematic screening of potential alternative new sites".

We wish to make clear that NECO has made no studies, analyses or systematic screening of potential new sites in the mid-continent area since the Sheffield site was selected, primarily because of the Commission's moratorium policy.

It is not clear, as suggested by Dr. Bell's letter, that the Commission's moratorium policy has in fact been reversed. To the contrary, as evidenced by Chairman Hendrie's letters dated July 7, 1978 to Secretary Schlesinger, Congressman Udall et al "...there is no prospect of opening new commercial burial grounds in the near future..." If so, however, it does not seem fair for the ground rules for evaluating our application to be changed at this late date. Even if the staff were to decide that consideration of alternative sites must be performed, it is unfair to impose this burden on the applicant. As noted above, this analysis should be made promptly by the Commission from available data. Unlike facility siting, obviously there are literally thousands of potential low-level waste burial sites throughout the mid-continent area.

2. Site Development Plan

We were pleased that your letter noted staff agreement that detailed trench layouts and design ten to twenty years prior to use is not required. However, it is difficult to interpret this philosophy in the light of the subsequent language. It is our position that NECO has already supplied adequate information to establish a licensing "envelope" defining all of the limiting parameters which must be observed in disposing of low-level radioactive waste. We are aware that this technique is used by the Commission in reactor licensing and do not understand why it should not be used for low-level waste burial.

NECO has already specified those portions of the 168 acre tract where waste can be buried under such "technical specifications" and has submitted a current estimate of the capacity of the site under these conditions. We have also provided our plan for the sequence of site utilization. However, to provide all of the detailed information requested in questions 3, the supplement to 3 of April 4, 1978, and A1 of April 20, 1978, for example, whose stated purpose is to evaluate the stability of

slopes or to obtain the precise estimates of the ultimate capacity of the site, would dictate the detailed long-range trench-by-trench site engineering and construction plan at this time. We believe this apparent contradiction should be resolved.

Moreover, we wish to emphasize the importance of obtaining a license which will not require constant revision by the NRC or its successors. We believe that we should receive the same treatment as in facility licensing, where operations are permitted to be conducted within defined limitations and under appropriate provisions for Commission action in the event such limitations are not met for any reason. As you know, the staff's insistence on a trench-by-trench approach has brought our work at Sheffield to a stop after almost thirteen years of operation in full compliance with the terms of our license.

3. Seismic Criteria

We are pleased with your statement that seismic criteria for shallow land burial sites differs from and may be less conservative than for reactors. We believe that the information provided in our May 12, 1978 reply to the staff's request is completely responsive and wish to confirm that no additional information is now considered necessary. In the event our assumption is not correct, we believe it is important to establish at our meeting the staff's acceptance criteria and what additional information it considers necessary.

4. Additional Field Studies

The staff has recently advised us informally that it may want future field studies "to characterize the geology and hydrology of the disposal site." We believe that all of the information contained in NECO's SAR and ER, as supplemented by responses to questions, most recently on May 10, 1978, fully establishes the site geology and hydrology. Recent data have presented little, if any, new information, and confirm what was known prior to the initial opening of the site. The last fifty boring logs for the 168 acre site will be made available for staff review within the next two or three weeks.

5. Outstanding Questions

Two outstanding questions have not yet been answered. They are Question 8 in the staff's request of April 4, 1978, and Question A-6 from the request of April 20, 1978, respectively. These responses will be submitted shortly. We wish to confirm the staff's agreement that no other matters are outstanding

Finally, inasmuch as most of the information for completion of the environmental review is now before the staff, it appears that the issuance of the Draft Environmental Statement could be expedited. Moreover, because the other parties to this proceeding, as well as many of the governmental agencies involved, have been following this matter on a routine basis, it would appear that the lengthy period of 90 days contemplated for comment and staff review can be shortened such that the Final Environmental Statement could be issued by January 1, 1979. This in turn would permit the hearing to commence about 30 days later rather than the May, 1979 date now contemplated by your staff.

We would like to discuss avoiding such licensing delay at our July 25, 1978 meeting. We hope that the hearing can be expedited so that this matter can be speedily resolved and a disposal site made available to the public in the midwest as soon as possible.

Sincerely,

NUCLEAR ENGINEERING COMPANY

Dr. Thomas S. Baer
Vice President

SW

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
NUCLEAR ENGINEERING COMPANY, INC.	)	Docket No. 27-39
	)	
(Sheffield, Illinois Low-Level Radioactive Waste Disposal Site)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S OPPOSITION TO MOTION TO COMPEL FILING OF DRAFT EIS", "ATTACHMENTS 1-8", and 4 Affidavits in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 1st day of December, 1978:

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