

NUREG-0750  
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# NUCLEAR REGULATORY COMMISSION ISSUANCES

May 1988



**U.S. NUCLEAR REGULATORY COMMISSION**

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NUREG-0750  
Vol. 27, No. 5  
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# NUCLEAR REGULATORY COMMISSION ISSUANCES

May 1988

This report includes the issuances received during the specified period from the Commission (CLI), the Atomic Safety and Licensing Appeal Boards (ALAB), the Atomic Safety and Licensing Boards (LBP), the Administrative Law Judge (ALJ), the Directors' Decisions (DD), and the Denials of Petitions for Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

**U.S. NUCLEAR REGULATORY COMMISSION**

Prepared by the  
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Office of Administration and Resources Management  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555  
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# Atomic Safety and Licensing Appeal Boards Issuances

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman  
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Thomas S. Moore  
Christine N. Kohl  
Howard A. Wilber

APPEAL BOARDS

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman  
Howard A. Wilber

In the Matter of

Docket Nos. 50-443-OL-1  
50-444-OL-1  
(Onsite Emergency Planning  
and Safety Issues)

PUBLIC SERVICE COMPANY OF  
NEW HAMPSHIRE, *et al.*  
(Seabrook Station, Units 1  
and 2)

May 24, 1988

The Appeal Board affirms a Licensing Board memorandum and order, LBP-88-6, 27 NRC 245 (1988), that authorized the issuance of a low-power license for operation of the Seabrook facility at levels up to five percent of rated power notwithstanding the pendency of two safety issues remanded to it earlier by the Appeal Board.

APPEAL BOARDS: ADVISORY OPINIONS

Although an Appeal Board does not normally render advisory opinions, there is no legal bar to its doing so in appropriate circumstances. See *Tennessee Valley Authority* (Hartsville Nuclear Plants, Units 1A, 2A, 1B, and 2B), ALAB-467, 7 NRC 459, 463 (1978).



#### ADJUDICATORY BOARDS: AUTHORITY

In light of 10 C.F.R. 2.758(a), adjudicatory boards lack the power to entertain a claim that a Commission regulation should be disregarded as inconsistent with a statutory command. See, e.g., *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant), ALAB-837, 23 NRC 525, 544 (1986); *Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit 1), ALAB-784, 20 NRC 845, 846 (1984); *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 89 (1974).

#### ADJUDICATORY BOARDS: AUTHORITY

Any insistence that the Commission's regulations themselves violate the Atomic Energy Act must be raised with the Commission; the regulations are not subject to challenge before adjudicatory boards. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-865, 25 NRC 430, 439 (1987).

#### REGULATIONS: INTERPRETATION (10 C.F.R. 50.57)

Under 10 C.F.R. 50.57, it is not every contention that need be heard or decided prior to the authorization of a low-power license. Rather, the section requires a hearing only on those contentions relevant to the activity to be authorized. Further, the section mandates findings only on matters in controversy with respect to the contested activity sought to be authorized.

#### ADJUDICATORY BOARDS: AUTHORITY

Just as adjudicatory boards are not empowered to hold Commission regulations invalid, so too they must accept the interpretation and effect accorded to those regulations by the body that promulgated them.

#### APPEARANCES

Diane Curran and Andrea Ferster, Washington, D.C., for the intervenor New England Coalition on Nuclear Pollution.

Thomas G. Dignan, Jr., and Deborah S. Steenland, Boston, Massachusetts, for the applicants, Public Service Company of New Hampshire, *et al.*

Gregory Alan Berry for the Nuclear Regulatory Commission staff.

## DECISION

We have before us the appeal of the intervenor New England Coalition on Nuclear Pollution (Coalition) from a February 17, 1988 memorandum and order issued by the Licensing Board in the onsite emergency planning and safety issues phase of this operating license proceeding.<sup>1</sup> In that memorandum and order, the Board concluded, contrary to the position of the Coalition, that the then pendency of two safety issues remanded by us in ALAB-875<sup>2</sup> did not stand in the way of the authorization of Seabrook operation at low power (i.e., at levels up to five percent of rated power).<sup>3</sup> These issues had their genesis in contentions that had been submitted by the Coalition several years ago and, as we concluded in ALAB-875, were erroneously rejected by the Licensing Board at the threshold. One of the contentions concerned the adequacy of the applicants' proposal for the inservice inspection of the Seabrook facility's steam generator tubes. The other focused upon the accumulation of aquatic organisms and other foreign matter in the facility's cooling systems.

Underlying the conclusion reached in the February 17 memorandum and order was the Licensing Board's factual determination that neither the asserted inadequacy of the proposed steam generator tube inservice inspection procedure nor the possibility of the hypothesized blockage in cooling systems had a bearing upon safe facility operation at low power. In its appellate brief, the Coalition does not contest that determination.<sup>4</sup> Rather, the appeal rests entirely upon a legal proposition. According to the Coalition, the issuance of a low-power license prior to the resolution of all contested issues pertaining to the safety of plant operation would deprive it of hearing rights guaranteed by section 189a. of the Atomic Energy Act of 1954, as amended.<sup>5</sup> This is said to be so irrespective of whether the issues relate to low-power, or solely to full-power, operation.

<sup>1</sup> See LBP-88-6, 27 NRC 245.

<sup>2</sup> 26 NRC 251 (1987).

<sup>3</sup> At present, low-power Seabrook operation is in all events precluded by reason of another discrete issue still before the Licensing Board. That issue involves the provision made for supplying notification of a radiological emergency at the Seabrook facility to members of the public located within the facility's plume exposure pathway emergency planning zone. See ALAB-883, 27 NRC 43 (1988), applicants' February 18, 1988 petition for Commission review pending. In nonetheless considering whether resolution of the steam generator tube integrity and cooling system issues were likewise a condition precedent to such operation, the Board followed the suggestion in our February 10, 1988 Memorandum (unpublished) at 7-8.

In addition, the Licensing Board has before it a remanded issue concerned with the environmental qualification of certain coaxial cable used for data transmission in the facility's computer system. See ALAB-891, 27 NRC 341 (1988). It may or may not prove necessary for the Board to determine whether the pendency of that issue stands in the way of low-power operation. See *id.* at 353 n.66.

<sup>4</sup> See New England Coalition on Nuclear Pollution's Brief in Support of Appeal of Memorandum and Order Renewing Authorization to Operate at Low Power (April 7, 1988) [hereinafter, Coalition's Brief].

<sup>5</sup> 42 U.S.C. 2239(a).



A. Before coming to grips with the merits of the appeal, we must consider the applicants' insistence, endorsed by the NRC staff, that the appeal has become moot by reason of developments occurring subsequent to the April 7 filing of the Coalition's brief.

On April 22, the Coalition advised the Licensing Board in writing that it had decided not to litigate further either the steam generator tube integrity contention or, to the extent that it related to the applicants' monitoring program for the detection of coolant flow blockage resulting from the buildup of microbiological organisms, the cooling systems contention.<sup>6</sup> As further explained in a subsequent filing with the Board below,<sup>7</sup> the decision not to oppose any summary disposition motions on the latter contention stemmed from the Board's March 18, 1988 Memorandum and Order (unpublished). In that issuance, the Board adhered to an earlier ruling that the cooling systems contention could not be read as encompassing microbiologically-induced corrosion.<sup>8</sup> The Coalition does not accept that ruling and intends to appeal it "at the appropriate time."<sup>9</sup> Moreover, it continues to believe that the applicants' "program for detecting and controlling microbiologically induced corrosion is not adequate."<sup>10</sup> For these reasons, it asked the Licensing Board to make clear in granting summary disposition to the applicants that that action was "limited to the issue of blockage of cooling systems by macro-organisms."<sup>11</sup>

In a May 12 Memorandum and Order (unpublished), the Licensing Board took note of the Coalition's April 22 Letter and subsequent filing. It concluded that the letter constituted an abandonment of both contentions and that, therefore, there was no need to issue a decision on the applicants' pending motions for summary disposition of them. The contentions were dismissed and, on the ground that summary disposition had not been granted, the Coalition's request in its May 6 Response was denied as moot.

Given these developments, we called upon the Coalition to respond to the suggestion that the appeal at hand is moot. In its response, the Coalition points

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<sup>6</sup> See Letter from Andrea Ferster to the members of the Licensing Board (April 22, 1988) [hereinafter, Coalition's April 22 Letter]. Inasmuch as that letter had an obvious possible relevance to the proper disposition of a matter pending before us, the Coalition should have specifically directed our attention to its content. Merely including this Board on the service list was not enough. Manifestly, we cannot be expected to examine routinely the copies served upon us of the large number of documents that are filed with the licensing boards in the various proceedings pending before those boards. If such a document warrants our review in connection with an outstanding appellate matter, it should be supplied to us with an appropriate covering memorandum or letter.

<sup>7</sup> See New England Coalition on Nuclear Pollution's Response to Applicants' Motion for Summary Disposition on NECNP Contention IV (May 6, 1988) [hereinafter, Coalition's May 6 Response].

<sup>8</sup> We understand the phrase "microbiologically-induced corrosion" to have reference to corrosion in cooling systems brought about by the attack of extremely small marine organisms that pass through protective screens. In contrast to larger "macro-organisms," by reason of their size these organisms do not directly pose a blockage threat (although any corrosion they might induce could possibly ultimately have that effect).

<sup>9</sup> Coalition's April 22 Letter at 2; Coalition's May 6 Response at 3-4.

<sup>10</sup> Coalition's May 6 Response at 3. See also Coalition's April 22 Letter at 1-2.

<sup>11</sup> Coalition's May 6 Response at 4.

out anew that it intends to challenge the Licensing Board's determination that its cooling systems contention did not encompass the issue of microbiologically-induced corrosion. This being so, we are told, the contention remains unresolved and, accordingly, the question raised by the appeal has not become purely academic.<sup>12</sup>

For present purposes, we accept this analysis. In addition, it occurs to us that a decision on the merits of the appeal might also prove useful in connection with another issue pending below. As previously noted, we recently remanded to the Licensing Board the issue of the environmental qualification of certain coaxial cable, and the Board may find it necessary to decide whether that issue must be resolved in advance of low-power operation.<sup>13</sup> Should that contingency arise, the Board undoubtedly would be advantaged by a definitive appellate ruling on the Coalition's claim that, irrespective of whether the cable fulfilled a safety function during low-power operation, such operation would be legally barred unless and until the cable was found to meet all applicable environmental qualification requirements.<sup>14</sup>

B.1. We now move forward to consider the merits of the Coalition's appeal. Of necessity, the Coalition maintains that there is no conflict between its interpretation of the scope of the hearing rights provided it in section 189a. of the Atomic Energy Act and the terms of 10 C.F.R. 50.57(c) — the principal (and the only one here relevant) provision in the Commission's regulations concerned with the authorization of low-power facility operation. For we have long recognized that, in light of 10 C.F.R. 2.758(a), we lack the power to entertain a claim that a Commission regulation should be disregarded as inconsistent with a statutory command.<sup>15</sup> And, as the Coalition itself acknowledges, just a year ago in this proceeding we had occasion to reiterate, in the context of section 50.57(c), that an intervenor's insistence that "the Commission's regulations themselves violate the hearing requirements of the Atomic Energy Act" must be raised "with the Commission; the regulations are not subject to challenge before us."<sup>16</sup>

<sup>12</sup> The Coalition repeats the statement in its papers below that its appeal will be filed "at the appropriate time." New England Coalition on Nuclear Pollution's Response to the Suggestion of Mootness Contained in Applicants' Brief in Response to NECNP's Appeal of Renewal of Low Power Authorization (May 19, 1988) at 16. We have not been asked for guidance, and do not here provide it, with respect to whether an appeal must have been taken from the Board's March 18 Memorandum and Order, or must be taken from the May 12 Memorandum and Order, or can await subsequent events. On this score, the time for the filing of a notice of appeal from the May 12 order has not as yet expired (see 10 C.F.R. 2.762) and, thus, an appeal from that order is still possible as of this writing.

<sup>13</sup> See *supra* note 3.

<sup>14</sup> Although we do not normally render advisory opinions, there is no legal bar to our doing so in appropriate circumstances. See *Tennessee Valley Authority (Hartsville's Nuclear Plants, Units 1A, 2A, 1B, and 2B)*, ALAB-467, 7 NRC 459, 463 (1978).

<sup>15</sup> See, e.g., *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant), ALAB-837, 23 NRC 525, 544 (1986); *Kansas Gas and Electric Co.* (Wolf Creek Generating Station, Unit 1), ALAB-784, 20 NRC 845, 846 (1984); *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 89 (1974).

<sup>16</sup> ALAB-865, 25 NRC 430, 439 (1987).

Our initial task, then, is to address the Coalition's insistence that section 50.57(c) is not to be taken as affirmatively authorizing the issuance of a low-power license prior to the resolution of all contested issues relevant to full-power operation. If we conclude that the section does contain such an authorization, it will be for the Commission to pass judgment upon the Coalition's belief that the consequence is the denial of statutory hearing rights.

2. Subsection (a) of 10 C.F.R. 50.57 sets forth the findings that must be made as a precondition to the issuance of a full-power license.<sup>17</sup> In subsection (c), the regulation focuses upon the requirements for "an operating license authorizing low-power testing (operation at not more than 1 percent of full power for the purpose of testing the facility), and further operations short of full power operation." Action by the Licensing Board on an applicant's motion seeking such a license

shall be taken with due regard to the rights of the parties to the proceedings, including the right of any party to be heard to the extent that *his contentions are relevant to the activity to be authorized*. Prior to taking any action on such a motion which any party opposes, the presiding officer shall make findings on the matters specified in paragraph (a) of this section as to which there is a controversy, in the form of an initial decision *with respect to the contested activity sought to be authorized*. The Director of Nuclear Reactor Regulation will make findings on all other matters specified in paragraph (a) of this section. [Emphasis supplied.]

As the emphasized portions of the section make clear, it is not every contention that need be heard or decided prior to the authorization of a low-power license. Rather, in so many words, the section requires a hearing only on those contentions "relevant to the activity to be authorized" — here, operation at levels up to five percent of rated power. With equal specificity, the section mandates findings only on matters in controversy "with respect to the contested activity sought to be authorized" — which, once again, in this instance is operation at levels not to exceed five percent of rated power.<sup>18</sup>

<sup>17</sup> In the instance of a facility such as Seabrook, those findings include:

(1) Construction of the facility has been substantially completed, in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(2) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(3) There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter; and

(4) The applicant is technically . . . qualified to engage in the activities authorized by the operating license in accordance with the regulations in this chapter. . . .

<sup>18</sup> For its part, the Coalition seemingly attaches no particular significance to the phrases "relevant to the activity to be authorized" and "with respect to the contested activity sought to be authorized." Rather, it would have us take

(Continued)



In short, we find the terms of section 50.57(c) to provide adequate support by themselves for the Licensing Board's conclusion that the decisive question was whether the remanded contentions presented issues germane to low-power, as distinguished from full-power, operation.<sup>19</sup> It need be added only that, although the Commission may not have been previously called upon to confront squarely the precise question that is raised by this appeal, a 1984 decision in the *Shoreham* proceeding makes plain its view that neither section 50.57(c) nor common sense mandates that the authorization of low-power operation be preceded by the resolution of safety issues having nothing whatever to do with such operation.<sup>20</sup>

Before the Commission at the time was the request of the *Shoreham* applicant, pursuant to section 50.57(c), for a license authorizing it to engage in fuel loading and low-power testing. The request came to the Commission against the background of the grant by a licensing board of the applicant's motion for summary disposition on the safety issues related to so-called "Phases I and II" (which covered fuel loading and precriticality and cold critical testing).<sup>21</sup> In connection with that grant, the Board noted that the facility lacked a fully qualified onsite source of emergency alternating current (AC) power, as required by General Design Criterion (GDC) 17 contained in Appendix A to 10 C.F.R. Part 50. Relying upon its interpretation of an earlier Commission order, however, the Board determined that, because neither onsite nor offsite AC power would be required for the protection of the public health and safety

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the last two sentences in the portion of section 50.57(c) quoted in the text above as indicating that the purpose of the section "was simply to relieve the Licensing Board of the obligation to make positive findings on *uncontested* issues prior to low power operation, by delegating this function to the Director of Nuclear Reactor Regulation (NRR)." Coalition's Brief at 16 (emphasis in original).

There are at least two crucial flaws in that thesis. First, it does not explain what the Commission might have had in mind when it limited the required hearing and initial decision to the activity "to be authorized." Surely, that explicit limitation cannot be dismissed as mere window dressing and thereby ignored. Second, the Coalition overlooks the fact that there was no occasion in enacting section 50.57(c) for freeing licensing boards of the obligation to make findings on uncontested issues. For, at the same time section 50.57(c) assumed its present form in 1972 as part of a general restructuring of facility license application review and hearing processes, the Commission added section 2.760a. See 37 Fed. Reg. 15,127, 15,137, 15,142-43 (1972). As promulgated, section 2.760a generically prohibited licensing boards in operating license proceedings from making findings of fact and conclusions of law on any uncontested matter. (In 1979, that section was amended to allow (albeit not to require) the boards in certain specified circumstances to raise and decide *sua sponte* matters that had not been put in controversy by the parties. See 44 Fed. Reg. 67,088 (1979).) Given section 2.760a, section 50.57(c) must be taken as simply a reinforcement of the Director's obligation to pass upon all *uncontested* matters pertinent to the sought low-power authorization.

<sup>19</sup> As just noted, section 50.57(c) assumed its present form in 1972 as part of a general restructuring of facility license application review and hearing processes. Although the accompanying statement of consideration has nothing illuminating to say about the section specifically, it does reflect that a major purpose underlying the entire restructuring effort was the expedition of the decisional process. See 37 Fed. Reg. 15,127. Certainly, the accomplishment of that objective is furthered, not retarded, if the section is read as authorizing low-power operation on the strength of a determination that the requisite assurance exists that such low-power operation will not endanger the public health and safety.

<sup>20</sup> *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-84-21, 20 NRC 1437.

<sup>21</sup> See LBP-84-35A, 20 NRC 920 (1984).



during Phases I and II, a license authorizing those phases could issue in advance of compliance with GDC 17.<sup>22</sup>

The Commission's role was to determine whether to allow the Licensing Board's order to become immediately effective, with the consequence that the NRC staff could issue a license for Phases I and II after resolving "any remaining *relevant* uncontroverted issues."<sup>23</sup> Carrying out that function, the Commission found one impediment to the order receiving such treatment. But that impediment was not the GDC 17 matter. Rather, the potential stumbling block to the inception of those phases of operation was one of our decisions — handed down subsequent to the entry of the Licensing Board order — that had remanded certain "minor" issues to the different Licensing Board that had responsibility for the basic operating license proceeding. As the Commission saw it, Phases I and II could not commence until that Board either resolved the remanded issues in favor of the applicant or determined them to be "*not material* to [those phases] of low-power operation."<sup>24</sup>

Insofar as the GDC 17 matter was concerned, the Commission explicitly agreed with the analysis that led the Licensing Board to decide that Phases I and II of low-power operation could be authorized notwithstanding the continuing lack of compliance with that criterion.<sup>25</sup> It acknowledged that, in a prior order, it had held that section 50.57(c) should not be read to make the criterion inapplicable to low-power operation.<sup>26</sup> But the Commission went on to explain that

[b]y this we meant only that § 50.57(c) does not, by itself, carve out an exception from all health and safety regulations that would otherwise be applicable to a low-power license. We did not mean to say, however, that every health and safety regulation, regardless of its purpose or terms, must be deemed fully applicable to fuel loading and to every phase of low-power operation, or that the pressures, temperatures, and other stresses associated with full power must be postulated in evaluating applicability of, or compliance with, regulations for low power. Each regulation must be examined to determine its application and effect for fuel loading and for each phase of low-power operation. *Simple logic and common sense indicate that some regulations should, by their own terms, have no application to fuel loading or some phases of low-power operation.*<sup>27</sup>

The Coalition makes no endeavor to distinguish the *Shoreham* result or the reasoning underlying it. Rather, we are told merely that the Commission indulged in a "novel" reading of section 50.57(c), totally devoid "of regulatory

<sup>22</sup> *Id.* at 926.

<sup>23</sup> 20 NRC at 1438 (emphasis supplied).

<sup>24</sup> *Id.* at 1439 (emphasis supplied).

<sup>25</sup> *Ibid.*

<sup>26</sup> *Ibid.* (citing CLI-84-8, 19 NRC 1154, 1155 (1984)).

<sup>27</sup> *Id.* at 1439-40 (emphasis supplied).

or case authority.<sup>28</sup> We leave it to the Commission to evaluate that criticism. Just as we are not empowered to hold Commission regulations invalid, so too we must accept the interpretation and effect accorded to those regulations by the body that promulgated them.<sup>29</sup>

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In sum, in terms and as interpreted by the Commission, 10 C.F.R. 50.57(c) allows the authorization of low-power operation so long as no safety issues pertaining to such operation remain unresolved. Given the unchallenged finding therein that neither of the issues here in question bears upon low-power operation, it necessarily follows that the Licensing Board's February 17, 1988, memorandum and order, LBP-88-6, 27 NRC 245, must be *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker  
Secretary to the  
Appeal Board

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<sup>28</sup> Coalition's Brief at 21.

<sup>29</sup> It will thus be for the Commission to pass ultimate judgment upon the Coalition's further claim that the *Shoreham* interpretation of section 50.57(c) cannot be squared with the promulgation two years earlier of 10 C.F.R. 50.47(d). We note in passing, however, our belief that the claim lacks merit.

Section 50.47(d) provides that a license authorizing operations up to five percent of rated power can issue in advance of the review by the NRC and the Federal Emergency Management Agency of offsite emergency preparedness planning. The Coalition reasons that, if section 50.57(c) had been intended to have the effect attributed to it by the Commission in *Shoreham*, section 50.47(d) would have been thought unnecessary. We disagree. Section 50.57(c) does not address the question of the extent to which offsite emergency preparedness is relevant to low-power operation and, thus, must be considered before such operation is commenced. That question is, instead, confronted and answered in section 50.47(d).

# Atomic Safety and Licensing Boards Issuances

## ATOMIC SAFETY AND LICENSING BOARD PANEL

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\*Permanent panel members

LICENSING BOARDS

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman  
Dr. Richard F. Cole  
Dr. George A. Ferguson

In the Matter of

Docket No. 50-352-OLA  
(ASLBP No. 87-550-03-LA)  
(TS Iodine)

PHILADELPHIA ELECTRIC  
COMPANY

(Limerick Generating Station, Unit 1)

May 5, 1988

The Licensing Board grants the Licensee's motion for summary disposition of the sole contention that questioned whether the proposed amendment to the Licensee's Technical Specifications would downgrade reporting requirements for iodine spikes which would have an adverse effect on public health and safety.

**RULES OF PRACTICE: SUMMARY DISPOSITION**

The summary disposition procedure should be utilized on issues where there is no genuine issue of material fact to be heard so that evidentiary hearing time is not unnecessarily devoted to such issues. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 457 (1981); *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 1), ALAB-696, 16 NRC 1245, 1263 (1982); *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550 (1980).



## RULES OF PRACTICE: SUMMARY DISPOSITION

It is the movant, not the opposing party, which has the burden of showing the absence of a genuine issue as to any material fact. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753 (1977). However, if the motion for summary disposition is properly supported, the opposition may not rest upon "mere allegations or denials"; rather, the answer must set forth specific facts showing that there is a genuine issue of fact. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-584, 11 NRC 451, 453 (1980).

## TECHNICAL ISSUE DISCUSSED

Iodine Spikes.

## MEMORANDUM AND ORDER (Granting Licensee's Motion for Summary Disposition)

### Memorandum

#### I. BACKGROUND

On September 27, 1985, the Nuclear Regulatory Commission ("Commission" or "NRC") Staff issued Generic Letter 85-19 regarding the requirements for reporting iodine spikes<sup>1</sup> during normal plant operation. That letter requested licensees to file a request for amendment to their operating licenses to incorporate the NRC model Technical Specifications relating to iodine spikes. On August 19, 1986, in response to that request, Licensee filed an application for an amendment with the NRC requesting changes to the Technical Specifications contained in Appendix A of Facility Operating License NPF-39 for Limerick

<sup>1</sup> An iodine spike is an increase and subsequent decrease in iodine dose equivalent in the primary reactor coolant following a change in reactor power or pressure. In the proposed amendment, Licensee defines iodine spike as an increase in iodine dose equivalent to a level greater than 0.2 microcurie per gram ( $\mu\text{Ci/g}$ ). (Aff. of John S. Wiley submitted in response to Board Order of March 17, 1988, requesting clarifying information.)

The definition of iodine spiking as it appears in NRC's annual reports on nuclear fuel performance is as follows: Iodine spiking (i.e., a temporary increase in coolant iodine concentration) is frequently observed at reactors where leaking fuel rods are present. These temporary increases in iodine concentrations have been observed to occur following shutdowns, start-ups, rapid power changes, and coolant depressurizations. An iodine spike is characterized by a rapid increase in the iodine concentration in the coolant by as much as three orders of magnitude, followed by a return to prespike concentration. The latter characteristic distinguishes the spiking phenomenon from a step-wise permanent (i.e., until the failed fuel is removed from the core) increase in coolant activity level caused by the sudden failure of one or more fuel rods. (NUREG/CR-3602, § 4.2.3 (1986).)

Generating Station, Unit 1. The NRC Staff published in the *Federal Register* a notice of the proposed issuance of the requested amendment and opportunity for a hearing and made a proposed determination that the requested amendment involved a no significant hazards consideration. 52 Fed. Reg. 7675 (Mar. 12, 1987).

Ultimately, after a special prehearing conference had been held on September 29, 1987, in a Memorandum and Order dated October 9, 1987 (unpublished), the Board admitted as parties Mr. Robert Anthony, pro se, and Air and Water Pollution Patrol (AWPP), represented by Mr. Frank Romano. The Board found that the submissions of and the oral presentations by Mr. Anthony and AWPP were unfocused. For that reason, among others, we concluded that, except for two somewhat similar contentions asserted by the intervening parties, none of the proposed contentions were admissible. These somewhat similar contentions were consolidated and, as reworded, the following contention was admitted as an issue in controversy:

*Consolidated Contention.* The proposed amendment to the Licensee's technical specifications would downgrade reporting requirements for iodine spikes which would have an adverse effect on public health and safety.

*Bases.* The change in the reporting requirements would eliminate or decrease Special Reports and Licensee Event Reports on iodine spiking, and thus would decrease the regulatory control exercised by the NRC, would permit a situation where Licensee could release radioactive iodine in excess of the one-time release limits, and, in not requiring the reporting of such releases, except on an annual basis, would endanger the health and safety of the uninformed public.

On November 23, 1987, the Licensee filed a motion for summary disposition. After extensions of time had been granted, on February 9, 1988, the two intervenors submitted responses opposing the motion for summary disposition. On February 18, 1988, the NRC Staff filed its response in support of the Licensee's motion for summary disposition. In an Order of March 17, 1988 (unpublished), the Licensee and/or the Staff were requested to respond in affidavit form to certain questions presented by the Board. On March 31 and April 4, the Licensee and the Staff, respectively, submitted responses. On April 25, Mr. Anthony submitted a response.

## II. DISCUSSION

### A. Regulations and Case Law

Section 2.749(a) of 10 C.F.R. provides that once a motion for summary disposition has been filed, the opposing party, with or without affidavits, may file an answer. Paragraph (a) further provides in pertinent part that:

There shall be annexed to any answer opposing the motion a separate, short and concise statement of the material facts as to which it is contended that there exists a genuine issue to be heard. All material facts set forth in the statement required to be served by the moving party will be deemed to be admitted unless controverted by the statement required to be served by the opposing party.

Section 2.749(b) provides in pertinent part that:

Affidavits shall set forth such facts as would be admissible in evidence and shall show affirmatively that the affiant is competent to testify to the matters stated therein. . . . When a motion for summary decision is made and supported as provided in this section, a party opposing the motion may not rest upon the mere allegations or denials of his answer; his answer by affidavits or as otherwise provided in this section must set forth specific facts showing that there is a genuine issue of fact. If no such answer is filed, the decision sought, if appropriate, shall be rendered.

Section 2.749(d) provides in pertinent part that:

The presiding officer shall render the decision sought if the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law. . . .

The summary disposition procedure should be utilized on issues where there is no genuine issue of material fact to be heard so that evidentiary hearing time is not unnecessarily devoted to such issues. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 457 (1981); *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 1), ALAB-696, 16 NRC 1245, 1263 (1982); *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550 (1980). It is the movant, not the opposing party, which has the burden of showing the absence of a genuine issue as to any material fact. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753 (1977). However, if the motion for summary disposition is properly supported, the opposition may not rest upon "mere allegations or denials"; rather, the answer must set forth specific facts showing that there is a genuine issue of fact. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), ALAB-584, 11 NRC 451, 453 (1980).

**B. The Licensee's Motion for Summary Disposition and the Staff's Support Thereof**

Licensee moves that the consolidated contention be dismissed and that, since only a single contention was admitted, the proceeding also be dismissed. In

support of its Motion for Summary Disposition, the Licensee appended the Joint affidavit of John Doering and John S. Wiley. Mr. Doering, an employee of Philadelphia Electric Company, is responsible for management and oversight of plant operations, engineering and chemistry support at the Limerick Generating Station. Dr. John S. Wiley, also an employee of Licensee, is Director of the Nuclear Plant Chemistry Section and is responsible for the technical direction of chemistry programs at Licensee's nuclear facilities. The Licensing Board is satisfied that Mr. Doering and Dr. Wiley are qualified to attest to the matters in their joint affidavit.

The following material facts as to which Licensee asserts there is no genuine issue to be heard are based on the Doering/Wiley affidavit (Licensee's Jt. Aff.), Licensee's Statement of Material Facts as to Which There is No Genuine Issue to Be Heard (Statement), and the Wiley affidavit (Wiley Aff.) submitted on March 31, 1988, in response to the Board's March 17, 1988 Order requesting clarifying information.

1. The amendment proposes no modification to the Limerick Generating Station radioactive release limits. (Licensee's Jt. Aff., §§ 8, 11, and Attachs. 3, 4, and 5; Statement, ¶ 1.)
2. The amendment proposes no modification to the Station reporting requirements related to plant radioactive effluents. (Licensee's Jt. Aff., §§ 8, 10 and 11; Statement, ¶ 2.)
3. High levels of iodine in the reactor coolant encountered by reactors operating in the early 1970s resulted from moisture trapped inside the fuel rod, pellet-clad interactions, and crud-induced corrosion. (Licensee's Jt. Aff., ¶ 12; Statement, ¶ 3.)
4. Improvements in the design of the nuclear fuel, improved fuel management practices, and the replacement of the older fuel assemblies gradually eliminated the failed fuel and the resulting higher levels of iodine in operating reactors. (Licensee's Jt. Aff., ¶ 12; Statement, ¶ 4.)
5. Since startup, for the first operating cycle, Limerick has averaged only  $8 \times 10^{-5}$   $\mu\text{Ci/g}$  of iodine in the coolant. (Licensee's Jt. Aff., ¶ 13; Statement, ¶ 5.)
6. The average measured value of iodine in the coolant at Limerick is 0.04% of the threshold value of 0.2  $\mu\text{Ci/g}$  contained in the Technical Specifications. (Licensee's Jt. Aff., ¶ 13; Statement, ¶ 6.)
7. The peak value for iodine concentration in the primary reactor coolant for the first cycle of operation was  $1.2 \times 10^{-4}$   $\mu\text{Ci/g}$ . As of March



- 29, 1988, the peak value for the second (present) fuel cycle is  $2.2 \times 10^{-4}$   $\mu\text{Ci/g}$ , which occurred on March 25, 1988.<sup>2</sup> (Wiley Aff. at 4.)
8. The boiling water reactor 1986 median value for iodine coolant activity was  $1.5 \times 10^{-3}$   $\mu\text{Ci/g}$ . (Licensee's Jt. Aff., ¶ 13; Statement, ¶ 8.)
  9. Sampling for iodine cooling activity is conducted at the Station in accordance with Technical Specification 4.4.5. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 9.)
  10. During operation at Limerick, the frequency of iodine sampling is daily. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 10.)
  11. The Station has established an administrative limit of 0.002  $\mu\text{Ci/g}$  which is 1% of the Technical Specification limit. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 11.)
  12. If the administrative limit for iodine levels in the reactor coolant were exceeded, this information would be discussed at the daily chemistry meeting held at the Station, management notified, and available courses of action considered. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 12.)
  13. The Director, Nuclear Plant Chemistry, reviews reactor coolant iodine monitoring data monthly for trends. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 13.)
  14. The NRC has assigned Resident Inspectors to monitor operation of Limerick Unit 1. (Licensee's Jt. Aff., ¶ 15; Statement, ¶ 14.)
  15. Periodic inspection reports by the Resident Inspectors and by Regional Specialists which include consideration of reactor chemistry are forwarded to Region I and headquarters and are made public. (Licensee's Jt. Aff., ¶ 15; Statement, ¶ 15.)
  16. Section 50.73(a)(2)(i) of 10 C.F.R. requires that a Licensee Event Report ("LER") be filed should the iodine coolant activity exceed 4  $\mu\text{Ci/g}$ , or 0.2  $\mu\text{Ci/g}$  for 48 hours. (Licensee's Jt. Aff., ¶ 16; Statement, ¶ 16.)
  17. Section 50.73(b) of 10 C.F.R. requires that any LER submitted must include the details surrounding the event, its cause and corrective actions, and provide a reference to previous similar events. (Licensee's Jt. Aff., ¶ 16; Statement, ¶ 17.)

<sup>2</sup>In a letter of April 8, 1988, Licensee's counsel notified the Board and the parties that an iodine concentration value of  $1.26 \times 10^{-2}$   $\mu\text{Ci/g}$  occurred on April 1, 1988. He noted that this value was less by a factor of 16 than the 0.2- $\mu\text{Ci/g}$  value contained in Technical Specification 3/4.4.5 (a copy of which was attached to the Wiley affidavit) and that, as of April 8, the iodine concentration was  $3.9 \times 10^{-3}$   $\mu\text{Ci/g}$ . As Licensee's counsel points out, the iodine concentrations measured on April 1 and April 8, 1988 were well below the triggering concentrations for plant shutdown. The Board notes that these two concentrations exceed the Limerick Station administrative limit of  $2 \times 10^{-3}$   $\mu\text{Ci/g}$ , and thus required discussion at the daily chemistry meeting held at the Station, notification of management, and consideration of courses of action. (Licensee's Jt. Aff., ¶ 14; Statement, ¶ 12.)

18. LER's related to Limerick Generating Station are placed in the Public Document Room in Washington, D.C., and the Local Public Document Room in Pottstown, Pennsylvania. (Licensee's Jt. Aff., ¶ 16; Statement, ¶ 18.)
19. Section 50.72(b)(1)(i) of 10 C.F.R. requires a 1-hour notification of the NRC Operations Center via dedicated telephone should the iodine coolant activity exceed 4  $\mu\text{Ci/g}$  or 0.2  $\mu\text{Ci/g}$  for 48 hours. (Licensee's Jt. Aff., ¶ 17; Statement, ¶ 19.)
20. The Station Emergency Plan requires the declaration of an Unusual Event if the level of iodine in the reactor coolant exceeds 0.2  $\mu\text{Ci/g}$ . (Licensee's Jt. Aff., ¶ 18; Statement, ¶ 20.)
21. The declaration of an Unusual Event would require state and local officials to be notified within 15 minutes and the NRC Operations Center to be notified immediately thereafter. (Licensee's Jt. Aff., ¶¶ 18, 22; Statement, ¶ 21.)
22. The amendment request does not seek to eliminate any Licensee Event Reports required by 10 C.F.R. § 50.73. (Licensee's Jt. Aff., ¶ 20; Statement, ¶ 22.)
23. The amendment does not seek any change to Technical Specification limits related to offsite release limits or the requirements for monitoring, sampling, or reporting of radioactive effluents. (Licensee's Jt. Aff., ¶ 21; Statement, ¶ 23.)
24. Any radiological release above regulatory or Technical Specification limits would require the implementation of the Station Emergency Plan. (Licensee's Jt. Aff., ¶ 18; Statement, ¶ 24.)
25. The dose calculations for the design-basis accident that is controlled by the iodine level in the coolant, the main-steamline-break accident, are unaffected by the proposed change to the Technical Specifications. (Licensee's Jt. Aff., ¶ 23; Statement, ¶ 25.)
26. As of March 29, 1988, there have not been any iodine spiking events at the Limerick Plant. (Wiley Aff. at 3.)

The NRC Staff's response supporting the Licensee's motion relies upon the affidavit of Richard J. Clark, an employee of the Office of Nuclear Reactor Regulation (NRR) of the Nuclear Regulatory Commission. Staff also responded to the Board Order of March 17 with an affidavit by Mr. Clark (Clark Supp.). Mr. Clark, a graduate engineer with postgraduate training in chemical and nuclear engineering has over 30 years' experience in the nuclear power field and currently serves as NRC Licensing Project Manager for the Limerick Generating Station. The Board finds Mr. Clark qualified to comment on the Licensee's motion and the consolidated contention in issue.

The NRC Staff maintains that the consolidated contention is factually incorrect, and consequently its allegations, bases, and conclusions are erroneous.

Therefore, it supports the Licensee's Motion for Summary Disposition as filed and, because the consolidated contention is the only admitted issue, supports dismissal of the proceeding as well. The following briefly summarizes the Staff's presentation of material facts as to which there is no genuine issue to be heard which augments the Licensee's motion for summary disposition:

1. The basis for model Technical Specifications in Generic Letter 85-19 was the significant improvement in the design of BWR fuel over the past decade that greatly reduced the potential for stress corrosion cracking of the fuel cladding and, thus, the release of iodine in the coolant. (Clark Aff., ¶ 6.)
2. Improved fuel management by Licensee, such as restrictions on power changes and preconditioning, has also significantly reduced the stresses that could cause a crack in the cladding with the resultant release of iodine into the coolant. (*Id.*)
3. Staff Generic Letter 85-19 stated that because the quality of nuclear fuel has greatly improved over the past decade, with the result that normal coolant iodine activity is well below the spiking limit, some of the current Technical Specifications on reporting requirements for iodine activity limits in the reactor coolant could be eliminated. (*Id.*, ¶¶ 6, 8; Attach. 3 to Licensee's Motion.)
4. The proposed amendment would not change the reporting requirements on iodine spiking in any manner that would reduce the timeliness of information available to the NRC and the public. (Clark Aff., ¶ 8.)
5. The only reporting requirements that would be changed by the proposed amendment are the requirement to submit special 30- and 90-day reports if the coolant iodine activity exceeds the Technical Specification limit of 0.2  $\mu\text{Ci/g}$  or if it exceeds the limit for 500 hours in any consecutive 6-month period. In Generic Letter 85-19, the NRC Staff recommended that these special reports on iodine activity be deleted from Technical Specifications since they serve no useful purpose and were duplicative of other reports — specifically, the reporting requirements of 10 C.F.R. §§ 50.72 and 50.73. With the current reporting requirements of §§ 50.72 and 50.73, the NRC determined that it would serve no useful purpose either to the Licensee or the NRC to also require a separate, special report. (*Id.*)
6. The proposed amendment would not change any offsite release limits or any reports related to offsite releases. Reports related to offsite releases and the release limits are governed by other Technical Specification requirements and NRC regulations which are totally unaffected by the requested changes. (*Id.*, ¶ 9.)



7. There have been no reportable incidents of iodine spiking in any BWR in 1986 or 1987, and there have been no reportable events at the Limerick plant. (Clark Supp. Aff. at 4, 5.)

The NRC Staff's filing in support of Licensee's motion concludes that the proposed amendment would not downgrade reporting requirements for iodine spikes, nor would it in any way affect the regulatory control exercised by NRC, and also concludes that the bases for the consolidated contention rest on erroneous assumptions that are fundamentally flawed and provide no support for the contention. (Clark Aff., ¶¶ 8, 9, 13.)

### C. The Intervenor's Opposing Responses

#### 1. AWPP

Contrary to the requirements of 10 C.F.R. § 2.749 for responses to motions for summary disposition, AWPP does not dispute or even address the specific material facts presented by Licensee. Instead, AWPP chose to discuss other matters such as discovery disputes, newspaper articles, boric acid corrosion (PWR related), other power plants, welding infractions, etc., all of which are not germane to the instant motion.<sup>3</sup> AWPP would have been better served had it addressed the issue before it.

However, AWPP does allege that Generic Letter 85-19 lacked a statistically researched basis. According to the NRC Staff, its basis is contained in the annual reports designated as NUREG/CR-3950, which discuss all aspects of fuel performance including iodine spiking. Reports similar to these have been published since 1979. A review of all volumes of NUREG/CR-3950 (four volumes, one volume for each of the years 1983, 1984, 1985, and 1986,

<sup>3</sup> AWPP refers to certain Licensee Event Reports, NRC Information Notices, and Inspection Reports. The Board has reviewed these documents and finds that none contradict any of the information contained in the Licensee or NRC Staff Affidavits supporting the motion for summary disposition. NRC Information Notice 86-108 (AWPP Opposing Response at 4) pertains to degradation of the reactor coolant system pressure boundary resulting from boric acid corrosion. This notice was addressed to pressurized water reactor licensees and simply does not apply to Limerick, a boiling water reactor station. Similarly, NRC Information Notice 88-02 (*id.*) pertained to fatigue cracks in steam generator tubes and was directed to Westinghouse PWR owners. Limerick has no steam generator tubes. NRC Inspection Report 50-352/85-02 (*id.* at 5) clearly states that no violations were identified. The minor and unexpected release of gaseous effluent was compared with the appropriate criteria and "[t]he technical specification limits for the release were not exceeded." NRC Inspection Report 50-352/85-02 at 4. The release limits for gaseous effluents will be unaffected by the proposed amendment. (Licensee's Aff., ¶ 21.) In its response at page 5, AWPP refers to LER 87-017, stating that it indicates Licensee does active monitoring under control, thereby making iodine control more important. A reading of LER 87-017 indicates that the system operated in the prescribed manner upon receiving a momentary high-radiation signal. There were no adverse consequences as a result of the event. No radiation was released. While no definite cause of the spurious signal was identified, it was suspected that maintenance work on a nearby panel generated a momentary electrical signal spike which simulated a high-radiation signal to the nuclear steam supply shutoff system and resulted in the system isolation. (LER 87-017 at 2, 3.) In any event, Licensee reports of this type which describe the functions of safety systems are not and will not be affected by the Technical Specification changes proposed. (Licensee's Jt. Aff., ¶ 8 & Aff. ¶ 8.)



respectively) establishes that there has been only one incident of iodine spiking in a BWR in the 4-year period covered by NUREG/CR-3950. That incident occurred at Big Rock Point. (Clark Aff., ¶ 12.)

## 2. Mr. Anthony

In the "rebuttal" section of his two-page opposing response, Mr. Anthony has grouped into six categories the material facts in "Licensee's Statement of Material Facts as to Which There Is No Genuine Issue to Be Heard" and proceeded to write a one-sentence comment on each group. We discuss each group below:

*Group 1.* With respect to the Licensee's Statement of Material Facts 1 and 2, *supra*, Mr. Anthony asserts that "Limerick release limits do not protect the public properly because they are based on boundaries beyond the railroad, so limits and effluent reports are skewed." (See also ¶ 1 of his April 25 response.) Clearly, Mr. Anthony's assertion relates to releases of radioactive effluents from the Limerick Station which are not relevant to the subject matter of the consolidated contention — viz., whether the proposed amendment to the Technical Specifications would downgrade reporting requirements for iodine spikes which would have an adverse effect on public health and safety. Thus, Mr. Anthony has not set forth facts showing that there is a genuine issue of fact. Moreover, such an argument is precluded by the doctrine of *res judicata*. In ALAB-828, 23 NRC 13 (1986), the Appeal Board affirmed the Licensing Board's refusal to reopen the record to hear Mr. Anthony's complaint about the supposedly improper use of the plant site boundaries by PECO in determining the public's exposure to gaseous and liquid effluent releases during routine plant operation. Mr. Anthony contended then, as now, that the dosages should be calculated at the closest, publicly accessible approaches to the plant (a railroad right-of-way and the Schuylkill River), rather than at the more distant site boundaries. The Appeal Board found no basis for overturning the Licensing Board's conclusion that nothing in Mr. Anthony's presentation raised a genuinely significant safety issue.

*Group 2.* With respect to the Licensee's Statement of Material Facts 3 and 4, Mr. Anthony asserts that "[w]e have seen no evidence from NRC to back up these assertions." However, the Staff's Mr. Clark attested in ¶ 12 of his affidavit that the NRC publishes fuel performance annual reports (NUREG/CR-3950) containing the statistical basis of Generic Letter 85-19 which states, *inter alia*, that "the quality of nuclear fuel has been greatly improved over the past decade with the result that normal coolant iodine activity (i.e., in the absence of iodine spiking) is well below the [acceptable] limit." Since Mr. Clark attests that these reports are available for copying at the NRC public document room and are also available for sale from the NRC, Mr. Anthony's mere assertion that

he has not seen such evidence does not serve to show there is a genuine issue of material fact to be heard.

*Group 3.* With respect to the Licensee's Statement of Material Facts 5 through 8, Mr. Anthony asserts that "[w]e have seen no figures from PECO or NRC to support these figures, but in any event they do not respond to the issue, which is iodine spikes, not averages." Mr. Anthony's mere assertion in effect that he has not seen the documentation does not serve to show there is an outstanding, unresolved genuine issue of material fact since we are unaware that he made any effort to seek production of these operating license documents from the Licensee and/or the Staff and was informed by them that there was no such documentation. Further, while many of the values addressed in the Licensee's joint affidavit at ¶ 13 are averages, the Licensee's affiants assert that there was a maximum value of only  $1.2 \times 10^{-4}$   $\mu\text{Ci/g}$  during the first cycle of operation and a peak value for the second (present) fuel cycle of  $2.2 \times 10^{-4}$   $\mu\text{Ci/g}$  as of March 29, 1988. The Staff's affiant, Mr. Clark, at ¶ 12 of his affidavit avers that since 1982 there has been only one incident of iodine spiking in a BWP.

*Group 4.* With respect to the Licensee's Statement of Material Facts 10 through 15, Mr. Anthony asserts that "[w]e do not necessarily dispute these items but they are also not relevant to the hazards to the public from iodine spikes which might cause surges of releases of radioactivity to the public without staff action or immediate registration or alarm due to inadequate monitoring or limits based on erroneous site boundaries." Here the Intervenor first alleges that iodine spikes might be undetected due to inadequate monitoring, but this allegation is not relevant to the issue presented in the consolidated contention -- viz., in short, whether the proposed amendment would downgrade reporting requirements.<sup>2</sup> Second, he repeats the complaint advanced in Group 1, *supra*, about dosages being improperly determined at the site boundary, which cannot be heard because of *res judicata*.

*Group 5.* With respect to the Licensee's Statement of Material Facts 16 through 21, Mr. Anthony asserts that "[w]e do not question that the reporting procedures exist but they are based on criteria which do not provide an immediate response, presumably plant shutdown, to levels of radioactive iodine which could cause severe damage to children walking along the railroad right of way or workers there." Once again, as he attempted to do in Groups 1 and 4, *supra*, Mr. Anthony resurrects his allegation about dosages being improperly

<sup>2</sup> Mr. Anthony attached two documents to his response, stating that one "casts doubt on PECO's ability to properly measure or calculate radiation doses from Limerick routine releases of radioactive effluents," and that "the other document questions the ability of nuclear power plants, including Limerick, to monitor or react to radioactive releases either inside or outside the plant." Even assuming these documents reflect that which he alleges they reflect, these documents, like his allegations, are not relevant to the issue raised in the consolidated contention. (See also ¶¶ 3, 4, and 5 of his response of April 25, where, in questioning the Licensee's ability to operate the plant safely, Mr. Anthony raises an issue irrelevant to the issue in the consolidation contention.)

calculated at the site boundaries rather than at the railroad right-of-way. Such an allegation is barred by res judicata.

*Group 6.* With respect to the Licensee's Statement of Material Facts 22 through 25, Mr. Anthony asserts that "[i]t may be true that the design basis for iodine levels in the coolant would be effective in shutting the plant in case of a steam line break and implementation of the emergency plan, but we assert that monitoring of releases should be continuous and should not only be tied to stack release levels but should alarm the station staff via continuous monitor registration of on-site and off-site instruments which could alert the operators to dangerous levels of radioactivity from an accident like Chernobyl or TMI, or a nuclear bomb accident, to which Limerick could add a lethal leverage." Once again, as he attempted to do with respect to Group 4, Mr. Anthony resurrects the allegation that the monitoring of releases is inadequate or ineffective. The allegation is simply not relevant to the issue raised in the consolidated contention.

At page 3 of his affidavit (Wiley Aff.), Mr. Wiley deposed that, pursuant to the present Technical Specifications, which would not be changed by the proposed amendment, the plant would be required to shut down if the primary coolant iodine activity exceeds 4  $\mu\text{Ci/g}$  or if the iodine activity exceeds 0.2  $\mu\text{Ci/g}$  for 48 hours. At ¶ 6 of his April 25 response, Mr. Anthony is concerned that, while the Technical Specifications require a shutdown if the iodine activity exceeds 4  $\mu\text{Ci/g}$ , they do not specify how soon thereafter a shutdown is mandated. However, his concern is misplaced because § 3.4.5 of both the current and proposed Limerick plant Technical Specifications require the plant to be in "at least hot shutdown with the main steam isolation valves closed within 12 hours." (See Clark Supp. Aff. at 3, 4, and Attach. B thereto.) Mr. Anthony's other comments in ¶ 6 of his response express his dissatisfaction with the continued operation of the plant for up to 48 hours prior to shutdown initiation when the iodine concentration in the coolant is in the range of 0.2 to 4  $\mu\text{Ci/g}$ . However, the fact of the matter is that this requirement was in the original Technical Specifications, it was not contested in the consolidated contention, and remains unchanged in the proposed amendment.

### III. CONCLUSION

We conclude that the Licensee, as supported by the Staff, has sustained its burden of showing that there is no genuine issue as to any material fact, that the Interveners have failed to show that there is a genuine issue of material fact that requires a hearing, and that the Licensee is entitled to a decision as a matter of law. The only reporting requirements eliminated by the proposed amendment are the requirements for 30-day and 90-day Special Reports which are already duplicative. No Licensee Event Reports are eliminated. The elimination of



the Special Reports would not decrease the regulatory control exercised by the NRC because whatever information that would be sent to NRC via the Special Reports would be contained in one or more other reports submitted to NRC, i.e., the iodine concentrations that would trigger the 30-day and 90-day Special Report requirement would also require plant shutdown and the preparation of a Licensee Event Report. The proposed amendment would not change any release limits or the reporting requirements for releases. The proposed amendment does not involve current limits for radioactive gaseous releases, and the allegation that the amendment would permit excessive one-time releases is without merit.

### Order

1. The Licensee's motion for summary disposition, as supported by the Staff, is granted. Accordingly, the Joint Contention is dismissed, the Intervenor is dismissed as parties, and this proceeding is terminated.

2. The Director of the Office of Nuclear Reactor Regulation is authorized to issue the requested amendment.

3. Our action is final for appellate purposes. Accordingly, pursuant to 10 C.F.R. § 2.762, any party may take an appeal from this Memorandum and Order by filing a Notice of Appeal within ten (10) days after service of this Memorandum and Order. A brief in support of such appeal shall be filed within thirty (30) days after the filing of the Notice of Appeal (forty (40) days if the appellant is the Staff). Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), any party who is not an appellant may file a brief in support of,



or in opposition to, any such appeal(s). A responding party shall file a single responsive brief, regardless of the number of appellants' briefs filed.

THE ATOMIC SAFETY AND  
LICENSING BOARD

Sheldon J. Wolfe, Chairman  
ADMINISTRATIVE JUDGE

George A. Ferguson  
ADMINISTRATIVE JUDGE

Richard F. Cole  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 5th day of May 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James P. Gleason, Chairman  
Dr. Jerry R. Kline  
Mr. Frederick A. Shon

In the Matter of

Docket No. 50-322-OL-3  
(Emergency Planning)

LONG ISLAND LIGHTING  
COMPANY  
(Shoreham Nuclear Power Station,  
Unit 1)

May 9, 1988

In this Partial Initial Decision, the Board rules on the adequacy of Applicant's reception centers for public use in the event of a radiological emergency at Shoreham.

**EMERGENCY PLANS: PLANNING BASIS**

On the assumption that emergency broadcast communications to the public are not confusing or conflicting, a radiation monitoring capacity for 20% or more of the emergency planning zone (EPZ) populations within 12 hours will satisfy regulatory criteria of NUREG-0654.

**EMERGENCY PLANS: MONITORING CAPACITY**

The ultimate monitoring capacity depends on the rate at which reception centers can monitor evacuees and not the capacity of the road system to deliver evacuees to the centers.

#### **EMERGENCY PLANS: TRAINING**

Prior familiarization or training of police, though desirable, is not crucial to implementation of traffic control.

#### **EMERGENCY PLANS: FUTURE TRAFFIC GROWTH**

The guidance in NUREG-0654, calling for an annual review of emergency plans, is adequate to provide for future traffic growth in the absence of barriers that cannot be corrected prior to license issuance.

#### **EMERGENCY PLANS: PUBLIC HEALTH AND SAFETY**

Standards for public health protection do not require the submission of theoretically optimal plans or resolution of all predictive uncertainty about how future emergencies will unfold: Such standards can be met by a practical demonstration of existing capability if the underlying analysis is reasonable and does not depend on flawed or distorted data or assumptions.

### **PARTIAL INITIAL DECISION ON SUITABILITY OF RECEPTION CENTERS**

#### **INTRODUCTION**

This is a Partial Initial Decision on offsite emergency planning issues pertaining to the application of the Long Island Lighting Company (LILCO) for an operating license at Unit 1 of the Shoreham Nuclear Power Station (Shoreham). The Decision addresses the adequacy of three reception centers proposed by LILCO for public use in the event of a radiological emergency at Shoreham. The adequacy of the centers is evaluated for compliance with NRC regulatory standards on emergency planning, codified in 10 C.F.R. § 50.47, Appendix E, and the criteria of NUREG-0654, FEMA-REP-1, Rev. 1. Also, the dictates of the Appeal Board in ALAB-832, 23 NRC 135 (1986), and ALAB-855, 24 NRC 792 (1986), are required to be considered. Proposed findings of fact and conclusions of law were submitted by LILCO, New York State, Suffolk County, and the Town of Southampton (Governments or Intervenors) and the Nuclear Regulatory Commission Staff (Staff). All of the proposed findings of fact and conclusions of law have been considered. Any such finding or conclusion not incorporated directly or inferentially in this Partial Initial

Decision is rejected as unsupported in fact or law or unnecessary to the rendering of this decision.

## HISTORY

Reception center issues have plowed a lengthy and complicated furrow in this proceeding over the past 4 years. In its initial emergency scheme, LILCO designated five primary and backup facilities in Suffolk County as relocation centers. These were to serve as reception centers for registering, monitoring, and decontaminating evacuees and as temporary shelters for housing, feeding, and sanitary facility purposes.<sup>1</sup> Subsequently, and allegedly due to opposition to LILCO's emergency plan by the Governor of New York and Suffolk County officials, several relocation centers became unavailable.<sup>2</sup> LILCO thereupon revised its plan to provide for separate reception centers and temporary shelter facilities (congregate care centers) to accommodate evacuees. Hearings were held, but as LILCO declined to identify the reception centers until after it completed negotiations, a void in the record was noted by the Board on the matter.<sup>3</sup> Subsequently, the record was reopened after the Veteran's Coliseum in Nassau County was identified by LILCO as its designated center. After a hearing and a Licensing Board decision approving the functional adequacy of the Coliseum, the Appeal Board remanded the issue with directions to broaden the scope to determine whether there were any factors, including location, that might make the Coliseum unsuitable to serve as a sole reception center for emergency planning zone (EPZ) evacuees.<sup>4</sup> Prior to the remanded hearing, however, the Nassau County government adopted a resolution resulting in the Coliseum also becoming unavailable to LILCO. Applicant then moved again to reopen the record after substituting three LILCO operating facilities in place of the Coliseum. Granted by the Board, the motion was aimed at the presentation of evidence in support of these facilities, all in Nassau County, to be utilized as reception centers. Bellmore, Hicksville, and Roslyn in the Towns of Hempstead, Oyster Bay, and North Hempstead, respectively, are the designated facilities.

In convening a hearing on the new reception centers, the Licensing Board included for litigation those issues remanded by the Appeal Board in ALAB-832, issues raised by Intervenors that were considered relevant to the proceedings and an issue concerning the proper population planning basis for monitoring evacuees, which was affirmed by the Appeal Board in ALAB-855, *supra*, 24 NRC at 801. *Also see* Board Memorandum and Order (Rulings on LILCO

<sup>1</sup> LILCO Exh. EP-1 at 4.2-1, 4.2-3.

<sup>2</sup> *Cordaro, et al.*, ff. Tr. 14,707, at 13-14.

<sup>3</sup> Tr. 15,713.

<sup>4</sup> ALAB-832, *supra*, 23 NRC at 162.



Motion to Reopen Record and Remand of Coliseum Issue), December 11, 1986 (unpublished). Testimony was received on the following issues:

1. The adequacy of LILCO's planning basis — the number of people expected to seek monitoring at LILCO's new reception centers;
2. Whether transportation and traffic problems might develop as a result of the reception centers' locations and their distance from the EPZ;
3. Whether the reception centers' locations might create problems in regard to the evacuation shadow phenomenon;
4. Whether the distance of the reception centers from the plume EPZ would increase exposure to radiation, causing an additional problem;
5. Whether LILCO's proposed monitoring procedures were adequate;
6. The staffing requirements given the new scheme;
7. The adequacy of evacuation routes to the three LILCO reception centers including the effects of traffic congestion on the way to and in the vicinity of the facilities, and LILCO's Revision 8 proposal to employ traffic guides on Nassau County roadways;
8. LILCO's proposal to transport all evacuees traveling on buses to the parking lot next to the Hicksville facility, when that facility itself is also proposed by LILCO to be the local emergency response organization (LERO) relocation center;
9. Whether the proposal to send evacuees to LILCO parking lots could or would ever be implemented in a way to protect the public health and safety.

We combine, in our Decision below, the issues litigated in the following manner: planning basis issues (1); traffic-related issues (2 and 7); distance of reception centers from EPZ issues (3 and 4); monitoring-related issues (5, 6, 8, and 9); and a zoning issue referenced by Applicant and Intervenors in proposed findings.

## *1. Planning-Basis Issues*

### *Introduction*

At the outset, we agree with Staff and Governments that this issue, the number of evacuees for whom monitoring must be provided, is fundamental to the question of the suitability of the reception centers. Staff Proposed Findings at 6; Governments' Proposed Findings at 19. It is clear that many other matters — for example, staffing requirements, space requirements, and traffic flow — all hinge to a considerable extent upon the number of people and vehicles that can be expected to come to the reception centers.

A brief procedural history of the matter may be useful here. In our Concluding Partial Initial Decision on Emergency Planning (CPID), LBP-85-31, 22 NRC 410, 417 (1985), we stated:

We accept LILCO's planning basis for the number of evacuees who might seek shelter, be processed through the relocation center and, according to NUREG-0654 §IIJ.12, must thus be monitored. [The estimate was 32,000 or 20% of the EPZ population.] The record is unclear as to how the Coliseum could accommodate the evacuees of the general population who will seek monitoring and processing, aside from those seeking shelter. We therefore find that LILCO's failure to plan for those of the general population who seek only monitoring and processing constitutes a defect in the Plan.

Before the Appeal Board, LILCO claimed that this matter had not been properly raised in the original contentions, and the Appeal Board remanded the issue for a determination by this Board as to whether the issue was "reasonably embraced within the concerns" that had been originally presented to us for litigation. 24 NRC at 421.

We then issued our Clarifying Decision on Remand (Monitoring of Evacuees), LBP-86-36, 24 NRC 561, 571 (1986), wherein we stated:

After analysis of the issue on remand, the Board adheres to its findings as stated in its concluding partial initial decision. We conclude that Contentions 24.O and 75 taken together properly raised the issue of population planning basis for evacuees arriving at a reception center, that LILCO had a fair opportunity to litigate the matter, and that when the smoke had cleared it had simply failed to carry its burden of proof on that point. In reaching this conclusion, the Board never found it possible to adopt any parties' views as to what the correct number should be in the planning basis for radiological monitoring. This remains true to this day; there is simply no basis to decide it in the record.

The Appeal Board then issued ALAB-855, affirming our position and saying:

Surely, the need of evacuees for monitoring and decontamination services does not hinge to any extent upon whether they have been able to make their own sheltering arrangements. This being so, it seems beyond serious dispute that monitoring and decontamination services must be regarded as within the "range of protective actions" that 10 C.F.R. 50.47(b)(10) requires be developed for all members of the public within the EPZ.

24 NRC at 800 (footnote omitted, emphasis in original).

The Appeal Board directed us to proceed to consider the motion to reopen the record for the purpose of considering the substitution of other facilities for the Nassau Coliseum. While the Appeal Board regarded the Applicant's estimate of the number of persons who will need monitoring and decontamination as well as shelter (20% of the total of 160,000 or 32,000) as being "of dubious validity," the Board noted that "LILCO may reassert the claim before the Licensing Board. Alternatively, it may proffer a new estimate." *Id.* at 801.

Accordingly, we accepted evidence on the number of evacuees that each of the parties believed LILCO must be prepared to accommodate.

#### *Identification of Witnesses*

LILCO presented the testimony of Douglas M. Crocker, Dale F. Donaldson, Diane P. Dreikorn, Edward B. Lieberman, Dr. Roger E. Linnemann, Dr. Michael K. Lindell, Dr. Dennis S. Mileti, and Richard J. Watts (LILCO Exh. 1), and the rebuttal testimony of Dr. Michael K. Lindell (LILCO Exh. 50). Suffolk County presented the testimony of Dr. Stephen Cole, Dr. Susan C. Saegert, Dr. James H. Johnson, Jr., Dr. David Harris, Dr. Martin Mayer, Gregory C. Minor, and Steven C. Sholly (SC Exh. 13); rebuttal testimony of Gregory C. Minor and Steven C. Sholl (SC Exh. 14); testimony of Dr. James H. Johnson, Jr., and Dr. Susan C. Saegert (SC Exh. 15); and New York State presented the testimony of James D. Papile, James C. Baranski, and Lawrence B. Czech (NY Exh. 1). FEMA presented the testimony of Dr. Thomas E. Baldwin, Thor W. Husar, and Joseph H. Keller (FEMA Exh. 2). The NRC Staff presented the testimony of Falk Kantor and Lewis G. Hulman (Staff Exh. 5).

#### *LILCO's Position*

LILCO relies upon a FEMA internal memorandum (the so-called "Krimm Memorandum," FEMA Exh. 1) for its position that Criterion J.12 of NUREG-0654 requires sufficient resources to monitor about 20% of the total population of the EPZ in 12 hours.<sup>5</sup> The criterion itself actually says only:

Each organization shall describe the means for registering and monitoring of evacuees at relocation centers in host areas. The personnel and equipment available should be capable of monitoring within about a 12-hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.

NUREG-0654 at 65.

LILCO, the NRC Staff, and FEMA all believe that an appropriate planning basis for the purpose of determining the resources in people and instruments

<sup>5</sup> The memorandum says:

The State and local radiological emergency preparedness plans should include provisions at relocation center(s) in the form of trained personnel and equipment to monitor a minimum of 20 percent of the estimated population to be evacuated.

For highly improbable radiological releases involving high levels of radiation encompassing a relatively large area, it may be necessary to monitor a greater number of evacuees beyond 20 percent of the population. In such a situation, State and local governments would be expected to develop and implement ad hoc response measures, supplemented, if needed, by Federal and private sector resources.

FEMA Exh. 1 at 2.



that should be committed to monitoring is that one should plan on monitoring 20% of the EPZ population in about 12 hours. LILCO Exh. 1 at 10 (Crocker, *et al.*); FEMA Exh. 2 at 7 (Baldwin, *et al.*); Tr. 19,221 (Kantor). One of LILCO's witnesses, Mr. Donaldson, a former NRC employee, had been a member of a team that developed a "precursor" document to NUREG-0654. He recalled that, although the group did not have a particular number in mind when that document was written, it was their belief that "only a small percentage" of the EPZ would require monitoring. LILCO Exh. 1 at 8.

The Applicant points out (LILCO Proposed Findings at 15-16) that the regulations do not require dedication of enough resources to handle *all possible* accidents, the emphasis being on prudent risk reduction measures. *Citing Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 533 (1983). And LILCO also offers the limited size of the EPZ itself as compelling the notion that something less than a "worst case" is a suitable basis for compliance with the regulations (LILCO Proposed Findings at 15).

LILCO notes that the "Krimm Memorandum," introduced both by FEMA (as FEMA Exh. 1) and by LILCO (as Attach. L to LILCO Exh. 1), was prepared by FEMA's Policy Development Branch and is FEMA's national policy. Tr. 18,314 (Keller); Tr. 18,440 (Husar); Tr. 18,346, 18,465 (Keller). That memorandum was based upon FEMA's review of "[p]revious experience gathered on evacuating responses to a variety of natural and technological emergencies." LILCO Proposed Findings at 16, *citing* FEMA Exh. 1.

LILCO does not dispute that there may be circumstances under which more than 20% of the EPZ population may require monitoring, but characterizes such circumstances as highly improbable, again citing the Krimm Memorandum (LILCO Proposed Findings at 17). But LILCO believes that planning for monitoring 20% of the EPZ population, like planning for the evacuation of a 10-mile radius, is the resource commitment required by the regulations.

LILCO also points out the result of a calculation by the Staff's witness, Lewis G. Hulman (Staff Exh. 5). LILCO Proposed Findings at 17-18. Mr. Hulman attempted to calculate the fraction of the population that could be expected to be contaminated in a severe accident. That is, he tried to determine how many people would be likely to *need* monitoring, rather than how many would *seek* it. He performed what he termed a "footprint assessment," calculating the conditional probability of the number of people within the 10-mile EPZ who could be within the plume. Staff Exh. 5 at 1 (Hulman). He used three different scenarios, Cases 1, 2, and 3. *Id.* at 6 ff. The first case calculated the number of people covered by a plume of width twice the Gaussian diffusion parameter centered in each of sixteen 22.5-degree sectors, adding to that the population in the sector within 2 miles of the plant, and used meteorological data to compute a weighted fraction of the time that various numbers of people would be exposed.



*Id.* at 5-6. In Case 2 it was assumed the plume would expand without the restrictions of Case 1, and in Case 3 the exposed population included all the people from 2 to 10 miles in each sector plus all those within 2 miles to be considered at risk, and weighted the probabilities according to the time the wind blows in each direction. *Id.* at 7. His ultimate conclusion was that "[e]ven in the most conservative of the three cases, the planning basis of 20% would be a conservative estimate of the number of people who might be within the plume." *Id.* at 9.

As we discuss *infra*, Suffolk County witnesses Gregory Minor and Steven Sholly criticized Mr. Hulman's analysis on the ground that he had ignored the effects of shifting wind and precipitation. SC Exh. 14. LILCO would have us accept Mr. Hulman's work as lending support to the 20% requirement nonetheless, since Mr. Hulman himself acknowledged these omissions and opined that his other conservatisms more than offset them. LILCO Proposed Findings at 18-19, *citing* Staff Exh. 5 at 8 and Tr. 19,211, 19,223, and 19,228.

LILCO would also have us discount the position of New York State (discussed in some detail below) to the effect that emergency plans should be able to accommodate 100% of the population of the EPZ. LILCO Proposed Findings at 23-24. LILCO points out that FEMA witnesses testified that other local plans in New York do not achieve that goal. *See* Tr. 18,381 (Keller, Husar); Tr. 18,371, 18,379, 18,472, 18,481-83 (Keller). And LILCO points out that at least one exchange in the transcript between one of the Licensing Board judges and a New York witness could be taken to mean that New York policy anticipates only that some sort of reserve monitoring capacity, not the capacity available early in an emergency, would permit 100% monitoring. LILCO Proposed Findings at 24, *citing* Tr. 18,238-39.

Finally, LILCO discounts the "monitoring shadow" theory of Suffolk County, a theory described in some detail below, saying that because the Board has already concluded that, in the case of the "evacuation shadow" the results of polls have "no literal predictive validity," we must reach the same result here. LILCO Proposed Findings at 25-28, *citing* LBP-85-12, 21 NRC 644, 667, 655-71 (1985). LILCO believes that the present polling data, even supplemented by the "focus group" study discussed below, cannot be used to predict the behavior of large groups of people in an emergency. And LILCO suggests that the "monitoring shadow" and "evacuation shadow" phenomena, that were exhibited at TMI-2, point in very divergent directions since only a tiny fraction of those in the surrounding area availed themselves of monitoring, while those who evacuated constituted a substantial fraction. LILCO Proposed Findings at 28-29, *citing* LILCO Exh. 1 at 15; Tr. 17,499 (Mileti); Tr. 19,195 (Kantor).

### Governments' Position

The Governments start by pointing out a phrase from a Commission decision, *San Onofre*, CLI-83-10, *supra*, 17 NRC at 536 n.12, wherein the Commission said that NUREG-0554 § II.J.12:

requires relocation centers capable of registering and monitoring all residents and transients in the plume exposure EPZ . . . .

While they admit that the statement "arguably constitutes dicta," the Governments urge us to give it weight in our decision (Governments' Proposed Findings at 27-28). That we decline to do.<sup>6</sup> We do indeed regard the statement as *obiter dicta*. We believe that the Commission was merely restating in abridged form the guidance offered in the NUREG document and that the words of the document itself, "all residents and transients in the EPZ arriving at relocation centers," properly govern.

The Governments attack the applicability of the Krimm Memorandum on five other overlapping grounds. First, they note that the memorandum derived its figure, 20%, from previous experience in which "from 3 to 20% of the evacuees arrived at relocation centers or shelters" (Governments' Proposed Findings at 28-29, *citing* FEMA Exh. 1 at 1). This, the Governments believe, forms little basis for the memorandum's conclusion that the upper limit of that range is an appropriate value for accommodating those who would seek monitoring. Indeed, the Governments say, the use of sheltering data to estimate the monitoring requirement is precisely the practice that this Board and the Appeal Board found unsatisfactory. Governments' Proposed Findings at 29-30. And they cite testimony that indicates that it is in fact upon the number of people who have sought shelter in emergencies that the Krimm figure is based. *Id.*, *citing* Tr. 18,321-23 (Keller); Tr. 18,356-61 (Husar).

Second, they assert that by relying on shelter-seeking data, the Krimm Memorandum neglects the fact that more than 20% of the EPZ population may be advised to seek monitoring by emergency broadcast system (EBS) messages. *Id.*, *citing* OFIP 3.6.1 at 2; NY Exh. 1 (Papile) at 8). The Governments point out that in the exercise of the LILCO Plan held on February 13, 1986, the scenario called for instructing approximately 60% of the summertime population to report

<sup>6</sup> We decline, but not for the reason that LILCO offers us. LILCO cites ALAB-855, *supra*, 24 NRC at 799, where the Appeal Board, in dealing with the Commission's statement, find "no occasion to explore . . . the bounds of our obligation to give effect to a Commission pronouncement that, albeit clear-cut, might not have been essential to the decision where it is found." LILCO Proposed Findings at 9. We note that the Appeal Board's statement was, in context, made in the course of a finding against LILCO and was followed one page later (*id.* at 800) by the words cited in our introductory matter requiring that monitoring and decontamination be developed for all members of the public in the EPZ.

to a reception center for monitoring. Governments' Proposed Findings at 32, citing NY Exh. 1 at 9.

Third, the Governments note that the Krimm Memorandum does not address the "monitoring shadow" phenomenon, a concept the Governments and their witnesses believe very important. Governments' Proposed Findings at 32. They cite FEMA witness Keller at Tr. 18,324 for the notion that the memorandum does not in fact address this concept, but they omit the statement by Mr. Keller on the next page of the transcript (Tr. 18,325) where he states that the upper end of the experiential range was selected because "some people may go to the reception center to allay their fears," an idea that, in our view, is virtually indistinguishable from that of the monitoring shadow.

Fourth, they allege that the Krimm Memorandum fails to support a 20% planning basis because it ignores the fact that the reception centers will be performing a dual function, both sheltering and monitoring. They cite LILCO's own witnesses (LILCO Exh. 1, Attach. P, OPIP 4.2.3 at 3, 7; Tr. 17,438 (Crocker); LILCO Exh. 1 at 3) for the fact that the reception centers will serve both needs. FEMA's witness, Mr. Keller, agrees. Tr. 18,328-29. Thus the Governments would have us find that the total of people seeking both shelter and monitoring could be larger than the planning basis.

Finally, the Governments would question the origins of the Krimm Memorandum. The memorandum was written in response to an inquiry by one of FEMA's witnesses, Mr. Keller. FEMA Exh. 1, Keller Letter. Mr. Keller sought guidance since, *inter alia*, he expected the issue of the planning basis to surface in this hearing. He wrote to Mr. Stewart Glass, then Regional Counsel for FEMA Region II, and Mr. Krimm, Assistant Associate Director for Natural and Technological Hazards in the Office of State and Local Programs and Support, FEMA Headquarters, issued the memorandum addressed to Division Chiefs of the corresponding Divisions in the FEMA Regional Offices. FEMA Exh. 1; Tr. 18,313 (Husar). The Governments point out that FEMA Guidance Memorandum IT-1, which is official guidance, establishes a hierarchy for FEMA guidance documents and sets forth a procedure by which such documents are to be developed and promulgated. Governments' Proposed Findings at 34-35, citing Tr. 18,162 (Papile); Tr. 18,193-96 (Baranski); SC Exh. 18. Because a memorandum from an Assistant Associate Division Director does not fit into the official FEMA guidance schema and is not generated according to FEMA's official method for developing guidance, the Governments would not have us give the Krimm Memorandum substantial weight. Governments' Proposed Findings at 37.

The Governments see the testimony of Mr. Donaldson, author of a "precursor document" to NUREG-0654, as offering scant support for LILCO's view. They point out that Mr. Donaldson's draft did not include the language in §J.12 (LILCO Exh. 1 at 8 (Donaldson)), that he did not have a specific number of



people in mind when he wrote the draft (*id.*; Tr. 17,449), and that the Steering Committee that worked on the document after him used it in ways unknown to him and did not consult him on the number of people who might be expected to arrive at reception centers. *Id.* They would have us give the Donaldson testimony no weight. Governments' Proposed Findings at 40.

The Governments also discount Mr. Hulman's testimony. Their primary objection to it is that it speaks only of the number of people who might be contaminated, not to the number who might seek monitoring for reasons associated with their own fears or worries, "behavioral" reasons in the Governments' argot. *Id.* at 53, *citing* Tr. 19,198-99 (Hulman, Kantor).

Further, the Governments would fault Mr. Hulman's analysis because it does not account for either wind shifts or precipitation. Again, Mr. Hulman admits this (Staff Exh. 5 at 8 (Hulman); Tr. 19,200 (Hulman)), but believes he has "more than offset these limitations." Staff Exh. 5 at 8 (Hulman). The Governments' witnesses, however, regard the omissions as serious. SC Exh. 14 at 5 (Minor and Sholly). They point out the "substantial chance" (about 86%) that some wind shift will occur in a 6-hour period. Tr. 17,941 (Minor). And they criticize Mr. Hulman for having failed to use computer codes, despite their existence, that would account for wind shift (Governments' Proposed Findings at 54 n.36, *citing* Tr. 19,200, 19,226-27 (Hulman)).

The Governments would also have us believe that the failure of Mr. Hulman's analysis to allow for the fact that evacuation itself could increase the number of people exposed during a wind shift is a serious flaw and that Mr. Hulman admitted as much under cross-examination. Governments' Proposed Findings at 54-55, *citing* Tr. 19,228-29 (Hulman); SC Exh. 14 at 5-6 (Minor, Sholly). Actually, at the point cited in the transcript, Mr. Hulman spent most of his time protesting that an increase in exposure due to wind shift during an evacuation is very unlikely.

Finally, the Governments would have us reject Mr. Hulman's ultimate conclusion, based on his graphs, of persons exposed as a function of time fraction (conditional probability). He pointed out that his results support a conclusion that the 20% planning basis is conservative (overestimates the number contaminated) 90% of the time. The Governments would use these same curves to point out that if one wished to cover the situation 95-98% of the time, the number of people could more than double. Governments' Proposed Findings at 55, *citing* SC Exh. 14 at 6 (Minor and Sholly); Staff Exh. 5 (Hulman), Fig. 2.

While the State and County agree that the 20% planning figure is too small, they appear to differ on the question of what a proper figure would be. The State witnesses testified that a prudent plan would permit monitoring of at least 100%



of the population in the EPZ. NY Exh. 1 at 7-10.<sup>7</sup> The County witnesses, on the other hand, espouse a complex theory, similar to the one we dealt with under the rubric "Shadow Phenomenon" in our PID. LBP-85-12, *supra*, 21 NRC at 655. There the matter involved the "evacuation shadow," a hypothesized large number of people who might evacuate from areas where no evacuation was ordered. Here the County witnesses hypothesize that a large number of people would appear and request monitoring, even though they came from areas where monitoring had not been advised. They call this the "monitoring shadow" and distinguish it from the evacuation shadow, although they assert that the two have similar roots. Governments' Proposed Findings at 56, *citing* SC Exh. 13 at 13-18, 27; Tr. 17,933 (Cole, Johnson, Saegert).

The Governments point out that witnesses for FEMA and the Staff agree that people might seek monitoring even though they did not come from an area where occupants had been advised to seek it. Tr. 19,198 (Kantor); 18,330-31 (Keller, Baldwin, Husar). While LILCO's witnesses took the position that such a monitoring shadow can be controlled by proper dissemination of good emergency information,<sup>8</sup> the Governments believe that the only reliable way to estimate the extent of the monitoring shadow is by surveying the population in advance. Governments' Proposed Findings at 55-59, 67-69. To this end the County presented the results of a survey conducted by the County's witness Dr. Stephen Cole. SC Exh. 13 at 13-16 (Cole, *et al.*) and Exh. 8 thereto at 8. The survey asked 1500 respondents by telephone how they would respond to a series of the EBS messages that were actually used in the February 13, 1986 exercise of the plan.<sup>9</sup> Dr. Cole's results indicated that 50% of "all Long Island households" would go to the specific center mentioned in the EBS messages. That would represent more than 1.3 million people. Governments' Proposed Findings at 59, *citing* SC Exh. 13 at 16-17 (Cole, *et al.*). While the Governments point out that they do not take the position that a full 1.3 million people would report for monitoring to the reception centers, they do believe that far more than the 20% of the EPZ population should be the planning basis. *Id.*

The Governments would thus have us find that Dr. Cole's survey has established that a large monitoring shadow would result from a radiological emergency. They would also have us delve into the reason for the "shadow."

<sup>7</sup> As we noted above, LILCO would interpret certain of the New York witnesses' responses as evidence that the State really only expects a capability for expansion to 100% monitoring. Note, however, that the Governments, in their Proposed Findings, specifically attribute a 100% requirement to the State (Governments' Proposed Findings at 25), although State plans do not necessarily fulfill that requirement at other plants in the State. Tr. 18,381-82 (Keller, Husar); Tr. 18,238-39 (Papale).

<sup>8</sup> This is a position not inconsistent with that adopted by this Board in reference to the "evacuation shadow," which all agree is an analogous phenomenon. *Cf.* LBP-85-12, *supra*, 21 NRC at 670.

<sup>9</sup> There is some dispute between the County and LILCO as to how accurately the messages used in the survey represented those used in the exercise. LILCO Proposed Findings at 28, *citing* Tr. 17,819 (Cole); Cordaro, *et al.*, ff. Tr. 1470, at 27; Tr. 10,498 (Weismantle).

They note that it is well established in the record of this case that people fear radiation. Governments' Proposed Findings at 65, *citing* Tr. 17,983 (Kline); SC Exh. 13 at 26-27; LILCO Exh. 6 at 464; Tr. 17,849 (Saegert). And they see confirmation of their theories in other work by Dr. Cole. In addition to the survey, Dr. Cole conducted group interviews of the type known as "focus groups," wherein he examined "the monitoring shadow and the fear which drives it." Governments' Proposed Findings at 66, *citing* SC Exh. 13 at 31-33; Tr. 17,824-25 (Cole). During these group sessions, recordings of the EBS messages from the February 13, 1987 exercise were played to the group, and the group then discussed the individual participants' perceptions of and attitudes toward a Shoreham accident and how they would react. SC Exh. 13 at 32. Analysis of the transcripts of these group interviews by Suffolk County's witnesses, Drs. Cole, Saegert, and Johnson, led these witnesses to conclude that there is a deep-seated fear of radiation on Long Island, that some Long Islanders believe that if there is *any* accident at Shoreham they will be exposed to radiation, that the fear would not be based upon objective or quantitative notions of the amount of radiation involved (any amount is dangerous), and that in the event of an accident many people will believe that their lives are in grave danger. SC Exh. 13 at 33-35. Thus many will seek monitoring (*id.* at 36). In short, it is the Governments' position that the primary motivator in an emergency is preexisting fear.

As to the effect upon people's behavior of messages that may be broadcast at the time of the emergency, the Governments believe that will be minimal. They particularly discount the notion that members of the public not advised to seek monitoring will not do so. LILCO's messages, they believe, will not overcome the strong fear of radiation. The County's experts have examined the EBS messages in LILCO's Plan and the messages broadcast during the February 13 exercise, and those experts conclude that the messages do nothing to calm the fear or to explain why only some people might have become contaminated. Governments' Proposed Findings at 70, *citing* SC Exh. 13 at 42. The EBS messages tell those outside the 10-mile zone that they are safe, but because many members of the public are predisposed to believe differently, they are likely to seek monitoring at the reception centers. Tr. 17,972 (Johnson). The Governments find further support for their theory that predisposition dominates emergency information in an article from the magazine *Nuclear Safety*, written by LILCO's witness Dr. Lindell. There, Dr. Lindell opined that the evacuation overresponse at TMI resulted "as much from prior public perception of the risks of nuclear power" as from conflicting information, and he said that ensuring consistency of information solved "only part of the problem."<sup>10</sup> Governments'

<sup>10</sup> Dr. Lindell was permitted to present rebuttal testimony to answer the Governments' implication during the hearing that his presented testimony was inconsistent with his *Nuclear Safety* article. He explained that to the

(Continued)

Proposed Findings at 71, *citing* LILCO Exh. 6 at 466; *see also* Governments' Proposed Findings at 66 n.44.

#### *NRC Staff's Position*

The Staff's position (and apparently that of FEMA) is very close to that of LILCO. To begin with, the Staff would accept the Krimm Memorandum as reliable guidance. Staff Proposed Findings at 9-12. The Staff particularly regards the 20% figure as reasonable in view of the calculation by its witnesses of the number of people who could potentially be affected by a release. *Id.* at 12, *citing* Staff Exh. 5 at 1 (Hulman), and 7 (Kantor); Staff Proposed Findings at 18-19. The Staff even parses the Krimm Memorandum closely, noting that the memorandum speaks of "20 percent of the population to be evacuated," and observing that, since LILCO's plan calls for evacuating only part of the EPZ under some circumstances, providing for 20% of the total EPZ population could, in some cases, more than satisfy the requirement. Staff Proposed Findings at 11. We agree, but we cannot see why having too great a capability under some special circumstances could lead to any problem.

Like LILCO, the Staff would have us note the fundamental similarity of the "evacuation shadow" and the "monitoring shadow" phenomena. On the basis of that similarity, the Staff would have us hark back to the decision we previously rendered (LBP-85-12, *supra*, 21 NRC at 655-71), in which we discounted predictions of such a shadow by polling techniques similar to those of Dr. Cole in the present case. Staff Proposed Findings at 14-16. The Staff notes that, in ordering a hearing held on the present question, we had distinguished between the two phenomena in question, but, with the evidence now in place, the Staff would have us find that the predictive value of public opinion polls should be given little weight and the number of people to be provided for should be assumed to be "a function of" those advised to evacuate. *Id.* at 16. The Staff would have us find that 20% is a reasonable upper bound for that function. *Id.* at 16-17. The Staff cites its own witness, Mr. Kantor, for the notion that offsite response organizations need not be capable of monitoring 100% of the EPZ population. *Id.* at 17, *citing* Staff Exh. 5 at 4 (Kantor).

It is also the Staff's position that a 20% base, expandable for the worst possible accidents, is a capability consistent with the general thinking embodied in NUREG-0654, and that the 12-hour period for monitoring mentioned in §J.12 thereof is based not on radiological health and safety considerations but is intended "to provide a recommended objective for planning purposes." *Id.*

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extent that his magazine article studied behavioral intentions and risk perceptions it did so to help planners to understand what types of cues or characteristics of the hazard would be most salient to local residents; it was not his intent to predict future behavior from such surveys. LILCO Exh. 50 at 2; Tr. 17,771-73 (Lindell).



### *Board Decision*

We have given the positions of the parties and the portions of the record that support them careful consideration. After having duly accepted evidence on the matter of the monitoring shadow, we are convinced that the matter of that shadow's size is governed by factors not substantially different from those that govern the evacuation shadow. That is, the tendency of people to seek monitoring when not advised to be monitored is, for practical purposes, influenced by considerations very like those that influence a decision to evacuate when not so instructed. The chief among these factors are predisposition due to fear of the hazard involved, and the information supplied at the time of the incident. "Information" in this sense includes both the official offerings and the rumors currently flying. We see, at this juncture, no immediate way to predict the behavior, and we are still convinced, as we were in our earlier PID, that Dr. Cole's polling techniques tell only what the situation is now, not what it will be at some undetermined future date. See LBP-85-12, *supra*, 21 NRC at 667.

Faced with a situation where no firm predictions are possible, we choose to accept the opinions of those who deal professionally with the business of emergency planning. In particular, we give great weight to the policies of FEMA, and, for that reason, to the guidance expressed in the Krimm Memorandum. The fact that the result of that memorandum jibes with the result of the Staff's analysis of the population fraction at risk we regard as fortuitous, but it is comforting to know that the plan provides for monitoring a number of people near the maximum that could be expected in all but the most severe accidents if it complies with the FEMA guidance.

We recognize the fact that, as the Governments would have it, the Krimm Memorandum is based upon figures for those reporting to shelters, but we recognize also that those figures were adjusted upward in a manner consistent with the best judgment of an emergency planning professional. In short, we conclude that a figure of 20% of the EPZ population, expandable in extreme cases, is a defensible figure for the number of people for which planners must provide a 12-hour monitoring capacity.

We must again caution, as we did in our earlier PID, that confused or conflicting information (or instructions) could cause a monitoring shadow that would lead to the swamping of the monitoring capacity, and we note that the results of the exercise hearing (LBP-88-2, 27 NRC 85 (1988)) are not such as to give great confidence that communication to the public will be clear and concise. Nevertheless, if one assumes that proper communication is indeed possible and will be required before licensing, we believe that provision of



monitoring capacity for 20% or more of the EPZ population within 12 hours will satisfy the guidance expressed in NUREG-0654 § II.J.12.<sup>11</sup>

## 2. *Traffic-Related Issues*

The traffic issues that arise in this case originate from the Appeal Board's remand on reception center issues wherein it found that evidence on traffic had been improperly excluded from our consideration of the functional adequacy of the Nassau Coliseum to serve as a reception center. In its remand order, the Appeal Board observed:

But, manifestly, a reception center that is beyond the reach of the persons it is set up to serve cannot fulfill its intended purpose, no matter how well the facility might be designed and equipped.

ALAB-832, *supra*, 23 NRC at 161-62 (1986).

The issues in the remand hearing that relate directly to traffic problems associated with reception centers are:

Whether transportation and traffic problems might develop as a result of the reception centers' locations and their distance from the plume EPZ.

The adequacy of evacuation routes to the three LILCO facilities proposed as reception centers, including the effects of traffic congestion on the way to and in the vicinity of the facilities, and LILCO's Revision 8 proposal to employ traffic guides on Nassau County roadways.

Memorandum and Order (Rulings on LILCO Motion to Reopen Record and Remand of Coliseum Issue), December 11, 1986, at 7, 18 (unpublished).

A number of other issues raised by the Appeal Board or the Intervenors potentially impacting the road capacity assessment — including shadow evacuation, LILCO's monitoring procedures, and its staffing requirements — are considered and resolved herein separately. This is necessary due to the inherent complexity of what became a multiparameter problem in litigation.

Although Intervenors expressed numerous detailed concerns about road capacity, it was apparent from the outset that a principal element of disagreement about traffic focused on the planning basis that defined the number of evacuees that would have to be accommodated at the reception centers rather than the intrinsic capacity of the highway system to carry traffic. See NY Exh. 5 at 39

<sup>11</sup> We note a divergence between the positions of the Staff and LILCO on the matter of the applicability of this ruling. The Staff would have us find that capacity for "up to 30% monitoring with ad hoc measures to expand" the capability is adequate for a finding limited specifically to Shoreham. Staff Proposed Findings at 20 n.8. LILCO would have us rule that 20% is adequate. LILCO's Reply to Staff Proposed Findings at 5. Since the testimony of the Staff and FEMA supports the 20% figure, we see no reason to limit our finding as the Staff requests.

(Hartgen and Millspaugh). Put in simplest terms, the streets and highways to be used to access the reception centers would accommodate the additional traffic if the traffic demand is not too great. If, on the other hand, the traffic demand for service is much higher than LILCO plans because background traffic will be higher than normal or shadow evacuation occurs, congestion in streets and highways might prevent access of some persons to the reception centers within the time prescribed in NUREG-0654 §J.12.

Intervenors presented their case on traffic in a manner that could not be rigorously compared with LILCO's assessment because their planning basis assumptions were entwined with their traffic analyses. None of the cases they presented in their prefiled testimony corresponded directly with the case LILCO presented and we are therefore precluded from making symmetrical comparisons of the respective positions. NY Exh. 5 (Hartgen, Millspaugh). Because LILCO carries the burden of proof in this proceeding, we first assess the validity of traffic analysis presented under its planning basis, taking into account any controverting evidence presented by intervenors. We examine separately the validity of the planning bases of the parties to determine whether LILCO's planning requires modification. In this decision, we find that LILCO's planning basis is adequate. *See supra*. There is therefore no need to determine here whether the traffic consequences that result from intervenors' traffic scenarios will make LILCO's facilities unsuitable as reception centers.

#### *LILCO's Traffic Analysis*

LILCO's analysis of traffic was presented by Mr. Edward Lieberman, Vice President of KLD Associates, a witness in these proceedings whom the Board found to be well qualified in the field of traffic engineering. LILCO Exh. 1, Attach. C (Crocker, *et al.*). The analyses of traffic expected to travel to one of LILCO's three reception centers after departing the western boundary of the EPZ was contained in three documents prepared by Mr. Lieberman. LILCO Exh. 1, Attachs. M, S, and T (Crocker, *et al.*). KLD TR-192 reported on assignment of evacuees to the road system from the EPZ to the reception centers and provided a preliminary road-capacity analysis. Subsequently, KLD submitted KLD TR-201 and, shortly thereafter, KLD TR-201A, which contained revisions including a ramp-capacity analysis not in KLD TR-201. Throughout the proceeding, LILCO relied primarily on its analysis in KLD TR-201A, and its findings therein were the principal subjects of dispute on traffic issues.

As noted, *supra*, LILCO relied on FEMA guidance contained in the "Krimm Memorandum" for its planning basis for the number of evacuees that would have to be monitored at the reception centers in an emergency. FEMA Exh. 1 (Baldwin, Husar, Keller); LILCO Exh. 1 at 9 (Crocker, *et al.*). That guidance asserts that planning to monitor 20% of the EPZ population would be an

adequate basis. However KLD performed additional analyses based on an assumption that 30% of the EPZ population would be monitored. According to LILCO's plan it would take steps to expand its monitoring capability on an *ad hoc* basis if more than 30% of the EPZ population sought monitoring in an emergency. *Id.* at 4, 52-55.

In performing its analysis, KLD made route assignments from the EPZ to the three centers, considered traffic congestion on the main east-west routes from the EPZ to the vicinity of the three reception centers, assessed traffic problems at intersections on the local streets that would be used to access the three centers, estimated the time it takes to monitor vehicles, and considered dispersion of traffic exiting from each center. KLD assumed without numerical analysis that traffic on the major routes between the EPZ and the reception centers would flow at "Level of Service F" (LOS F) which is described in the Highway Capacity Manual (HCM) as a condition where the volume of traffic ( $V$ ) demanding space on the highway exceeds its capacity ( $C$ ), and breakdown of flow occurs. That condition is determined analytically when the volume-to-capacity ratio exceeds 1 ( $V/C$  greater than 1). The effect of LOS F is congested flow characterized by low average traffic speeds, stop-and-go traffic, and formation of traffic queues. Average highway speeds under those conditions are known from experience to be in the range of 17-30 miles per hour (mph). KLD estimated the volume of evacuating traffic that would actually be serviced under those conditions, assuming that the entire EPZ population evacuates and either 20% or 30% of the population goes to the three reception centers. In so doing, KLD first analyzed cases where either 50% or 100% of the measured peak period background traffic could also be on the roads when an evacuation began but later accepted that 100% of background should be used in its analysis.

After performing its traffic analysis, KLD reached the conclusion that the monitoring rates at each of the three reception centers, and not highway capacity, control the rate at which evacuees can be serviced (monitored, decontaminated if needed, and assigned to congregate care centers if requested). They found further that the hourly monitoring capacity was sufficient to process 30% of the evacuees in less than the 12 hours called for in NUREG-0654 §J.12 and that, in fact, LILCO's ultimate capacity for monitoring would permit it to monitor about 46% of all of the evacuees from a complete evacuation of the EPZ in that time period. An important finding from the analysis is that although traffic congestion would exist on the roads and highways, congestion would not prevent the timely monitoring of all evacuees expected to arrive at reception centers under the planning basis even though there would be delaying effects relative to unimpeded traffic flow. Indeed KLD assumed that traffic will be congested on the major routes from the EPZ, and the analyses show that local streets and intersections would be congested and that lines of waiting traffic will form at the entrances to each of the reception centers. Such lines, however disagreeable



to evacuees, are an advantage to the monitoring process according to KLD since they provide a continuous supply of cars to the reception centers that keeps them working at full capacity until the monitoring task is finished. Tr. 18,581 (Lieberman). In LILCO's view, since the reception centers have more than the requisite capacity to monitor its specified planning basis for evacuees, there is no need to expand the capacity of the centers themselves simply because they are rate controlling under its plan. LILCO Exh. 1 at 3-4, 30-32 (Crocker, *et al.*). Although there was some disagreement about decontamination rates, all parties came to accept that monitoring and not the other services of reception centers controlled their capacity.

KLD performed its traffic analysis by first assigning traffic from various entry points within the EPZ to major highways and then assigning routes to the reception centers. Routing assignments were made to maximize available reception center capacity and road capacity. According to KLD, the routes were also chosen for simplicity so that evacuees could successfully follow them in an evacuation. The State claims, however, that the maximization of capacity utilization that was achieved by this exercise was only a theoretical benefit that might not be achieved in practice. Individuals might not follow their assigned routes in an evacuation, with the result that some routes will be overutilized and some underutilized, causing congestion and delay not accounted for in the KLD analysis. KLD believes, however, that route switching by evacuees will be minimal and, in any event, will tend to balance out with no net adverse impact on highway congestion. LILCO Exh. 26 at 4-5 (Lieberman).

LILCO's analysis of traffic capacity employed standard procedures specified in the 1985 HCM, published by the Transportation Research Board. These procedures were programmed for computer use by the Federal Highway Administration, and this software was used for the studies contained in KLD TR-201 and 201A. Intervenors did not challenge the use of the HCM software and in fact used it themselves in their effort to rebut LILCO's case. The substance of Intervenors' case against LILCO was that the analyses done by KLD were improper because it had used unrealistic EPZ population estimates for evacuating traffic, or faulty traffic data bases or assumptions in its analyses. Intervenors produced a number of analyses, using their own models and the HCM software, showing that if different data were used or different assumptions made, the results would show a less-favorable traffic flow than found by KLD. This, in turn, would render the reception center plan unworkable. NY Exh. 6 at 16 (Hartgen, Millsbaugh).

The analysis performed by KLD required KLD to obtain field data on traffic before it could run the HCM software. Field data were collected on background traffic flow during peak periods, using machines to record the flow and on traffic signal timing by direct observation and measurement. KLD also obtained data



on turn movements of existing traffic at key intersections that would be utilized by evacuating traffic to approach the reception centers.

Intervenors assert that these efforts resulted in unreliable data that could not be used to plan for monitoring at reception centers. According to Intervenors, machine counts of traffic turn movements are more reliable than counts taken by observers over short intervals and should have been used to estimate turn movements. Similarly, it was alleged, KLD could have used actual traffic signal settings supplied by the State to estimate "green time" for evacuation traffic, but in many cases it did not. The field data collected by observers were unreliable, assert Intervenors, because the signals are traffic actuated, and exact estimates of maximum green time cannot be obtained by this method. Additionally, LILCO's assertion of adequacy rests also on monitoring times at reception centers, which intervenors claim to be seriously understated. NY Exh. 5 at 55-56, 61-63, 67 (Hartgen, Millspaugh).

#### *Intervenors' Position*

The State presented testimony of expert witnesses Dr. David Hartgen and Mr. Robert C. Millspaugh who conducted their own traffic analysis of the reception center plan using a traffic model termed CARS. NY Exh. 5 at 33, Exhs. 1, 2 (Hartgen, Millspaugh). The State assessed eight cases or scenarios which it said constitute a sensitivity analysis that reveals the impact of assumptions on the estimated volume of traffic that would have to be served in an emergency. The cases started with a low estimate consisting of 30% of the EPZ population and background traffic at 50% of normal. Traffic volume was increased in successive cases, culminating in three that used projections of 150% of normal background combined with other assumptions such as the anticipated volume after 5 years of projected population growth. NY Exh. 5 at 33-41, Attachs. 10-13 (Hartgen, Millspaugh).

Results of the analyses were expressed in part as the ratio of volume of traffic divided by the capacity of the specific road link being analyzed ( $V/C$  ratio). This ratio is assertedly important to traffic analyses because its magnitude corresponds to the degree of expected traffic congestion. When  $V/C = 1$ , traffic congestion occurs because the demand for capacity is equal to actual road capacity. When  $V/C$  exceeds 1 for a link, forced flow, congestion, and queuing occur (LOS F). The State's analyses show that long traffic queues would exist on the roadways after 12 hours. NY Exh. 5 at 61, 67, 70 (Hartgen, Millspaugh).

The  $V/C$  ratio cannot physically exceed one on any real roadway because that would indicate the impossible situation where more traffic passes along a road than it can accommodate. Nevertheless it is reasonable to compute a ratio greater than 1, and the result is meaningful because the projected demand

((V)olume) in an emergency may well exceed the existing road capacity for substantial periods of time.

The State's results show at least some intersections on routes leading to reception centers as having projected  $V/C$  values near 1 or larger for each of the cases it considered. Not surprisingly, the number of such instances increased with the State's assumption of severity of demand. In the State's case, DOT 4, for example, which assumed 100% background traffic, 50% of the EPZ population going to centers, and 50% evacuation shadow, the State found twenty-two intersections on routes to the reception centers for which demand would exceed their respective capacities. Queues of 3 miles would form, taking longer than 12 hours to dissipate if this case materialized in an actual evacuation. NY Exh. 5 at 43 (Hartgen, Millspaugh).

The State analyzed three critical intersections, one near each of the reception centers, found high  $V/C$  ratios for each, and projected that, in an emergency, long traffic queues would form and still remain after 12 hours. The State assumed higher and, in its view, more realistic traffic demand than LILCO did in its analysis of the same intersections.

The State's critique of KLD's analyses was based primarily on its view that KLD should have used a larger planning basis to assess the traffic flow in an emergency. The several cases it analyzed differed from one another, and LILCO's, primarily in the assumptions made initially as to how many vehicles would be on the road. The value of the exercise, Intervenor's claim, is that it demonstrates the sensitivity of the conclusions to the input assumptions. Thus, in their view, we cannot accept LILCO's analysis because even though it shows that traffic congestion will not be a factor in the Applicant's ability to monitor the number of evacuees in their planning basis, the conclusion is unreliable and would change for the worse if one of the State's more realistic planning bases were used instead. While at first glance the dispute between the parties appears to be a war of computer models, in reality it is not. It is instead a conflict over subjective assumptions to be used in computer models. The Intervenor's use their analyses to press their views that we should reject FEMA's (and LILCO's) planning basis because a large shadow evacuation will take place, or because more than 20% or 30% of evacuees from the EPZ will seek monitoring in an emergency.

The litigation also produced an array of detailed technical disputes on narrow issues related to quantitative traffic assessment through prefiled testimony, cross-examination of experts, and a flurry of rebuttal and surrebuttal testimony filed by LILCO, the Staff, and the State. These are all considered in this Decision to the extent parties briefed them in their proposed findings.<sup>12</sup>

<sup>12</sup> Intervenor's did not brief several of these issues in dispute and we consider them abandoned. These include: effects of road construction, gridlock, average highway speed, delay times calculated by HCM software, time  
(Continued)

The State claims that KLD erred in its analysis by assuming that vehicles would make left turns in two lanes instead of one as permitted by lane markings and signals at the intersections of Route 107 and Old Country Road serving the Hicksville center and at the Long Island Expressway (LIE) eastbound service road and Willis Avenue serving Roslyn. Such turns are said to be both dangerous and illegal because they conflict with oncoming traffic and drivers have obstructed views. While police control might improve the situation, intervenors claimed that police control in an emergency would not be available because LILCO has no agreement with the Nassau County Police Department to implement its emergency plan. Governments' Proposed Findings at 243-45. Additionally, it is stated, the police have not reviewed the plan so that they could not make it work even if they do agree to participate.

The Intervenor also claim error because LILCO did not consider future growth in traffic congestion which is likely to be worse than now. Error is also alleged regarding LILCO's assessment of traffic within the reception centers themselves and of traffic exiting the centers. The interiors of the centers are said to have obstructions and equipment in place which will slow the circulation of traffic. Traffic exiting the centers will encounter congestion causing traffic to backup into the centers which will reduce their capacity to monitor. NY Exh. 5 at 55-58 (Hartgen, Millspaugh).

The foregoing factors assertedly combine to show that LILCO's reception center plan is unacceptably faulty and that traffic congestion will prevent LILCO from monitoring the population it has planned and certainly any larger and more realistic population volume. Therefore, in Intervenor's view, the plan should be rejected.

#### *Staff Position on Traffic Issues*

Dr. Thomas Urbanik II presented testimony on traffic issues on behalf of the NRC Staff. Dr. Urbanik is an Associate Traffic Engineer with Texas A&M University who has previously been accepted as a qualified expert in the Shoreham proceedings. Staff Exhs. 3, 4 (Urbanik).

Dr. Urbanik reviewed, on behalf of the NRC Staff, the analyses performed by KLD Associates reported as KLD TR-192 and KLD TR-201. These documents, in Dr. Urbanik's judgment, were found to follow a traditional traffic engineering approach of estimating traffic demand and capacity in order to ascertain the magnitude of potential problems. According to Dr. Urbanik, the KLD analysis was a standard analysis that meets a simple test of reasonableness, and it properly

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distribution of traffic demand, HCM procedures, effects of truck traffic, the State's use of average annual daily traffic data, right turn on red, and capacity of the Meadowbrook Parkway ramp. Governments' Proposed Findings at 169 n.133.



relied on the HCM for calculating the capacities of the roadways. Staff Exh. 3 at 4-6.

In rebuttal testimony, Dr. Urbanik opined that the CARS model employed by the State experts is a transportation planning model for use in assessing land-use impacts of proposed developments. The CARS model is not a traffic operational tool and cannot be used to predict driver behavior on a link-specific basis. It was a misuse of the model to use it for detailed traffic analysis in this proceeding although it can be used to identify alternatives on a broad scale. On the other hand, Dr. Urbanik agrees with New York experts that congestion will be extensive and that delays will be substantial. He finds, however, that the notion of level of service or V/C ratio is largely irrelevant because the roads retain the capacity to function even under severe loading. The Long Island Expressway, for example, has level of service F (V/C over 1) every day for substantial periods. Nevertheless, thousands of people use it and make it to work each day. The level-of-service designation is, in reality, a measure of convenience or quality in negotiating the highways and not an indicator of gridlock or breakdown of function. Staff Exh. 4 at 2-3 (Urbanik).

The successful implementation of LILCO's reception center plan depends on the capacity of the proposed reception centers to service the anticipated number of evacuees and on the capacity of the road and highway system between the EPZ and the centers to deliver the evacuees within the time prescribed by NUREG-0654 § J.12. The time requirements, however, are not directly related to protection of public health but are a means of ensuring that adequate resources exist to implement the reception center plan. Tr. 19,225-26 (Kantor). We resolve issues related to each component in the following sections.

#### *Reception Center Capacity*

LILCO designed its reception center operations to perform monitoring of 30% of evacuees from the EPZ even though FEMA guidance endorses a figure of 20% as being adequate. The three monitor centers — Hicksville, Bellmore, and Roslyn — will provide a total of sixty-three monitoring stations, each of which according to plan can monitor a vehicle and its occupants in 100 seconds. LILCO Exh. 1 at 4, 41 (Crocker, *et al.*). The total hourly capacity to monitor was calculated to be 1152 vehicles at Hicksville, 576 at Roslyn, and 540 at Bellmore. *Id.* at 32. At those rates, 30% of 58,000 vehicles from a full EPZ evacuation could be monitored in times ranging from about 6½ hours at Roslyn to 9¾ hours at Bellmore. *Id.* at 33. While these are estimates for clear weather, LILCO could also monitor 30% of evacuees under 12 hours in inclement weather. *Id.*

At the indicated monitoring rates, FEMA's planning guidance of 20% of EPZ evacuees could be monitored in somewhat more than 6 hours at all three locations. *Id.* at 37. If more than 30% of evacuees arrive, LILCO will implement



backup procedures by calling on INPO (Institute of Nuclear Power Operations) and Department of Energy for additional assistance. LILCO Exh. 1 at 52 (Crocker, *et al.*). The centers and roads, however, have the ultimate capacity of serving about 46% of the EPZ population in 12 hours. LILCO Exh. 26 at 5 (Lieberman).

Intervenors raised many detailed issues concerning reception center capacity in their prefiled testimony. NY Exh. 5 at 53-73 (Hartgen, Millspaugh). However, they briefed only five issues related to capacity in their proposed findings. Governments' Proposed Findings at 220-28. The capacity of the centers to serve evacuees, found by LILCO, is inaccurate, Intervenors claim, because the 30% planning basis is too small, monitoring will take longer than 100 seconds per vehicle, long lines will back up into intersections, exiting traffic will back up into the centers themselves, and the centers have obstructions that will interfere with internal circulation.

The Board addresses and resolves issues of planning basis, time required for monitoring, queueing at intersections, and internal obstructions at the centers elsewhere in this Decision.

The Board accepts FEMA's and LILCO's planning basis of 20% of the EPZ population as appropriate for assessing the capacity of reception centers. It accepts as additional evidence of adequacy the fact that the centers can monitor 30% of the EPZ population before assistance is requested and that the ultimate capacity of the centers without assistance would permit monitoring of about 46% of the EPZ population within 12 hours. *See infra.*

The Board finds separately that queueing at intersections or the blockage of upstream intersections by evacuation traffic streams has no bearing on the capacity of the centers to monitor at the planned rate. Finally, we find separately that LILCO has remedied or commits to remedy deficiencies related to internal obstructions at the centers. *See infra.*

Intervenors asserted in prefiled testimony that it is possible that traffic exiting reception centers could encounter congestion causing it to back up into the sites and thus set the rate-limiting times for servicing evacuees. No evidence, beyond a general assertion of opinion, was cited. NY Exh. 5 at 58, 68, 72. LILCO considered exit streets and traffic control strategies and concluded that they would be adequate to service exiting traffic. LILCO Exh. 26 at 37 (Lieberman); Tr. 18,659-60, 18,706-11 (Lieberman). It is a simple inference from the record that street capacity available to service incoming traffic is reasonably similar to that available to service outgoing traffic and that departing traffic cannot for reason of inherent limited street capacity be the rate-limiting step in the overall process of serving evacuees. Provisions for active traffic control on outbound routes must be made, however, to avoid conflict between incoming and outgoing traffic at critical intersections. Tr. 18,976-80, 18,983, 18,985, 19,138-39 (Urbanik). KLD recommends police control of critical intersections

in an emergency although it structured its analysis to demonstrate that adequate capacity exists generally without additional control. LILCO Exh. 1, Attach. T at 33 (Crocker, *et al.*). The Board accepts that, with police control of exiting traffic, no restriction of reception center capacity will occur that is sufficient to disturb LILCO's conclusion that reception centers are the rate-determining step in the overall processing of evacuees. We provide later in this Decision for a requirement that LILCO inform the Nassau County Police Department of the provisions of its reception center plan which we expect will include requirements for control of traffic exiting reception centers.

The Board accepts LILCO's capacity analysis for reception centers as reasonable and finds no need to alter its estimates of average time to process evacuees.

#### *Route Assignments*

LILCO is said to have erred in its original route planning along major highways, which assigned residents of the EPZ to one of the three reception centers using predesignated routes. The error arises according to Intervenors because there is no assurance that evacuees will actually follow their assignments. This is assertedly true because the routes are not simple and people may perceive for themselves a better route to take to one of the centers. This will allegedly cause additional congestion and delay in reaching the reception centers. NY Exh. 5 at 13 (Hartgen, Millspaugh).

LILCO asserted that a conscious effort was made in planning to keep the routes as simple as possible and that in any event the routes are not complex. Moreover, there is no reason to conclude that route switching by evacuees will cause delay because any that occurs will tend to balance out among designated routes and traveling on unassigned routes will be a benefit by reducing traffic on assigned routes. Finally, LILCO claims, the highways have substantial excess capacity over the planning basis of 20%, which was endorsed by FEMA, to be able to accommodate reasonable imbalances caused by some people choosing different paths. LILCO Exh. 26 at 5 (Lieberman); Tr. 19,025-28 (Urbanik); Tr. 17,641-43 (Crocker).

Litigation of this question degenerated into a subjective dispute over whether the routes to the reception centers are simple. We did not find it illuminating. LILCO used prominent routes that actually exist between the EPZ and the reception centers in its analysis. There is no evidence that it selected nonfeasible routes for planning. KLD TR-192 at 3-7. There is also excess highway capacity (30%) beyond LILCO's planning basis and FEMA's to accommodate traffic imbalances. Its assignment of routes appears reasonable because its choices are constrained by the existing highway system. It is immaterial to our decision whether or not the routes are simple or whether some other routes might have been chosen. We regard the traffic analysis that LILCO performed as an

assessment of the capability of evacuees to reach the reception centers within the time required. The analysis was not a prescription of a single acceptable means for doing so. There is no record basis for believing that projected dose reduction could be improved by further analysis, and there is therefore no regulatory basis to inquire further on speculative questions about the future behavior of evacuees or to attempt to predict with precision how a future evacuation will play out. The Board concludes that LILCO's traffic assignment process was reasonable and does not raise serious questions regarding the overall validity of its traffic assessment for reception centers.

#### *Highway Capacity Estimates*

LILCO began its overall capacity analysis with the assumption that the major highways between the EPZ and the reception centers would flow at Level of Service F (forced flow) in an emergency and that average vehicle speeds would be about 17-20 mph based on experience and technical references. Tr. 18,643-46 (Lieberman). The NRC Staff agreed that that speed was reasonable for those conditions. Tr. 19,123 (Urbanik). KLD calculated the actual hourly volume of traffic that could pass over those routes at those average speeds, although in reality forced-flow traffic can move at speeds of up to 30 mph. LILCO Exh. 1, Attach. T at 21-25 (Crocker, *et al.*); LILCO Exh. 26 at 6-8 (Lieberman); LILCO Exh. 51 at 9-10 (Lieberman); Tr. 18,645-46 (Lieberman). Intervenors were dissatisfied because no analysis of capacity was made for routes between the EPZ and the reception centers and because KLD had just assumed that these routes would not be the limiting factor. It is claimed that such factors as number of lanes, lateral clearance, number of trucks, and others could cause a reduction of freeway capacity by 30%. NY Exh. 5 at 13 (Hartgen, Millspaugh); NY Exh. 7 at 18-19 (Hartgen, Millspaugh).

LILCO asserted that it had already assumed worst-case conditions during peak background flow conditions. Tr. 18,644-46 (Lieberman). Further, since the highways are already assumed to be operating at LOS F, where demand exceeds capacity and queues form according to the HCM, the question of capacity really focuses on the capacity of the on-ramps between the EPZ and the reception centers. LILCO Exh. 26 at 7; Tr. 18,973 (Urbanik). The on-ramp capacity will be severely restricted in flow for non-EPZ travelers because the highways will be congested from evacuation traffic originating further east. LILCO Exh. 1, Attach. T at 13 (Crocker, *et al.*).

The Board concludes that LILCO's assumption of worst-case conditions of traffic flow along the major routes between the EPZ and the reception centers is acceptable as the assumption of an expert based on experience and technical literature. The assumption was reasonable because a detailed analysis would not have shown any important additional information that was not already included



in the assumption. Tr. 18,645-46 (Lieberman). The experts have said repeatedly that LOS F traffic moves, but at lower speeds than normal, that highways retain capacity to serve vehicles, and that additional demand does not cause failure of function either at intersections or on highways. Tr. 19,121-23 (Urbanik). Although Intervenors' experts repeatedly asserted or promoted an inference that highways under those service conditions would break down or become unworkable, they were unable to support that view under cross-examination. Tr. 18,794-96 (Hartgen, Millspaugh). The main effect of additional traffic demand on saturated roads is to cause queuing, and that effect will be felt at the access routes between the EPZ and the centers and not on the highway itself, which is already assumed to be at capacity. LILCO Exh. 26 at 33 (Lieberman).

LILCO assumed LOS F for the LIE which did not require further capacity reduction, and it found that Intervenors had used a 7.5% reduction factor in their analysis, which actually would result in higher estimated capacities for the LIE than are used in the Shoreham plan. LILCO Exh. 51 at 17-18 (Lieberman). Intervenors could not quantitatively support a larger reduction, did not use 30% capacity reduction in their own analysis, and declined to brief the effects of truck traffic in their proposed findings because it was a matter of lesser significance. See note 12, *supra*.

The Board concludes that Intervenors' criticism of LILCO's highway assessment was lacking in credibility and that LILCO has adequately explained the reasons for making the assumptions that it used in the traffic analysis of major routes. LILCO's consideration of major routes is adequate to establish that they constitute no barrier to evacuees reaching reception centers in the numbers LILCO plans for and that the rate of transport on major highways will not limit the overall rate with which they can be served at reception centers.

#### *Capacities of Local Streets and Intersections*

LILCO's analytical approach for local traffic was to estimate the existing peak-period background traffic on many local streets and intersections, add to it the projected evacuation traffic volume, and then determine with the HCM traffic model whether the capacity is sufficient, with both components present, to deliver the evacuees to the centers within about 12 hours. That basic approach is not disputed. Neither is the validity of the HCM traffic model. Therefore the validity of LILCO's conclusions depends on whether the input data and assumptions used for modeling are accurate and whether its interpretations are reasonable. If they are, the results are valid.

After performing the traffic analysis, LILCO found that the streets and intersections in the vicinity of each center would be congested, that traffic would move more slowly than normal, that lines of waiting traffic would form temporarily at key intersections near each center, and that, nevertheless, the



capacity of the local streets and intersections exceeded the capacity of the reception centers to monitor evacuees. Therefore the capacity of the local roads would not limit LILCO's ability to timely monitor the number of evacuees in its plan. Tr. 18,585, 18,735-38 (Lieberman); LILCO Exh. 1, Attach. T at 12-13, 26 (Crocker, *et al.*).

Before the HCM traffic model could be used to assess the capacity of streets in the vicinity of the centers, it was necessary to collect a substantial volume of traffic data in the field. Measured parameters needed for the analysis were background traffic volume, geometry of intersections and approach lanes, signal timing at key intersections, and frequency of left- and right-turn movements by background traffic. Data collection was the responsibility of LILCO's consultant, KLD Associates. LILCO Exh. 1, Attach. T at 16.

There is no dispute concerning the accuracy of the measured volume of peak background traffic although there was speculative testimony that something other than 100% of the measured background traffic should be used in the analysis of projected evacuation traffic volume. LILCO analyzed some examples using 50% of background, and Intervenors analyzed some examples using 150% of background. Neither party had strong empirical reasons for doing so although both presented arguments that their approach was defensible. NY Exh. 5 at 39, 44-45 (Hartgen, Millspaugh); Tr. 18,838-39 (Hartgen); LILCO Exh. 1, Attach. M at 15, Attach. T at 20 (Crocker, *et al.*). The Board concludes that the least speculative analysis is the most reliable and that an acceptable traffic analysis should be based on 100% of the actually measured peak background traffic. Tr. 19,111-12 (Urbanik). The examples that LILCO relies on in its most recent analyses use that number. LILCO Exh. 1, Attach. T at 20, 26 (Crocker, *et al.*).

Intervenors raised a host of objections to LILCO's traffic analysis based on perceived errors in analysis and on its alleged failure to take contingencies for future traffic flow into account: in a future emergency, background traffic near the reception centers will be higher than normal (NY Exh. 5 at 17); county traffic volumes will grow in the future (*id.*); shadow evacuation will cause more traffic than that for which LILCO plans (*id.* at 19); a delay analysis was not performed and drivers will be frustrated (*id.* at 22); traffic signals may malfunction on the day of the emergency (*id.* at 23); KLD should have used highest traffic flow expected (*id.* at 24); queues and gridlock may form at intersections (*id.*); there will be future road repairs that could affect future capacity (*id.* at 26); KLD employed a meaningless approach to its analysis of capacity and queues in an emergency (*id.* at 29); KLD used faulty turn movement data (NY Exh. 6 at 4); there was impermissible assumption of left-turn movements from two lanes (*id.* at 7-8); departure volumes instead of approach volumes were used at intersections (*id.* at 9); improper assumptions about right turn on red were used (*id.*); there was use of improper signal timing data (*id.* at 10); truck traffic was underestimated (*id.*); the number of congested intersections was underestimated

(*id.* at 13); there were improper conclusions drawn from the ramp-capacity analysis of KLD TR-210A (NY Exh. 7 at 10); and there was improper analysis of the consequences of Level of Service F (*id.* at 12-13).

Intervenors specifically abandoned several of these issues in their proposed findings (*see* note 12, *supra*) and ignored others without comment. Therefore not all require resolution in this Decision.

Intervenors also challenged LILCO's conclusions with calculations of their own showing that there would be many instances where intersections would have  $V/C$  ratios equal to 1 or greater. They produced a total of eight scenarios using a model termed "CARS" which was criticized by the Staff and Applicant as inappropriate for the intended purpose. NY Exh. 5 at 33, 39-40; Staff Exh. 4 at 2-3; LILCO Exh. 26 at 27. Intervenors used the HCM model, utilized by LILCO, for detailed analyses of several intersections.

Intervenors also performed an analysis of three critical intersections, one near each center, the results of which are alleged to be indicative of what is likely to occur at most critical intersections. The locations were identified as: (1) Rt 107-Old Country Road (to Hicksville); (2) Rt. 27-Newbridge Road (to Bellmore); and (3) Long Island Expressway-Willis Avenue (to Roslyn). NY Exh. 5 at 46-50 (Hartgen, Millspaugh). The substance of Intervenors' concern, which was meant to be illustrative of the local road network in general, is that KLD improperly analyzed left-turn movements, found  $V/C$  ratios that were too small, and that long queues will form which will take up road space, causing gridlock. *Id.* In rebuttal testimony, Intervenors added the intersection of Meadowbrook Parkway southbound exit ramp to eastbound Route 27 (to Bellmore) and the intersection of Old Country Road and South Oyster Bay Road (to Hicksville) to their list of concerns. The substance of their criticism is that these intersections will be well over capacity for a substantial period of time in an evacuation. NY Exh. 6 at 14-15 (Hartgen, Millspaugh).

Intervenors declined to brief their concerns about Meadowbrook Parkway ramp in their proposed findings, claiming that this was a matter of lesser importance. *See* note 12, *supra*. As to the other intersections, the Board treats them as illustrative of the alleged problems generally applicable to traffic near reception centers. The issues cited for these intersections are that they will be over capacity ( $V/C$  greater than 1), they will be congested, long queues will form, planned left turns are improper or illegal and that they will in some manner fail to function as planned. These are the most significant alleged problems with LILCO's traffic analysis in general. Our resolution of these problems will be inclusive of the named intersections cited by Intervenors; however, because they are cited as illustrative examples, we see no need to focus undue separate attention on them.

Intervenors relied on the computed  $V/C$  ratio as an indicator of function for intersections, alleging variously that when the ratio approached or exceeded 1,

the intersections would perform poorly, break down, or cease functioning (NY Exh. 5 at 33, 40, 47, 50, 74; NY Exh. 6 at 6, 8, 12, 13, 16; NY Exh. 7 at 9, 13). LILCO acknowledged that delays occur when  $V/C$  is greater than 1; however, it asserted that it has already accounted for that in its analysis which shows that there will be congestion on the highways and streets.

Intervenors effectively ended their quantitative analyses of intersections with the determination of the  $V/C$  ratio. They relied thereafter on subjective interpretations that invariably took the form of assertions that where the ratios were greater than 1, congestion would be worse than LILCO found or that traffic service will break down and the reception center plan will be unworkable. NY Exh. 6 at 12 (Hartgen, Millspaugh); Tr. 18,784-86; 18,793, 18,795 (Hartgen). Intervenors did not systematically calculate the actual volume of traffic that could be served under the difficult conditions that both parties agree will prevail. Tr. 18,781-800, 18,805, 18,820, 18,895 (Hartgen, Millspaugh). LILCO, however, did compute the amount of traffic that could be served under congested conditions for the local road network. LILCO Exh. 51 at 16 (Lieberman).

We reject Intervenors' assertions of breakdown of intersection function where it is based on subjective interpretation of large  $V/C$  ratios because quantitative analyses show that road capacity exists to serve traffic even when  $V/C$  ratios are 1 or more. Even if Intervenors' computations of  $V/C$  are correct for critical intersections, ratios above 1 are not indicators of total breakdown of the traffic system. Tr. 19,048-49 (Urbanik). The HCM refers to breakdown of flow, not function. NY Exh. 7 at 13 (Hartgen, Millspaugh). What is indicated by high ratios is that traffic will be congested, it will move in stop-and-go fashion at reduced average speed, and queues will form. While possibly inconvenient to motorists this does not imply cessation of service.

#### *Queue Formation*

The main consequence of conditions where  $V/C$  ratios are greater than 1 is that the fraction of traffic in excess of road capacity forms queues at the bottlenecks which in this analysis will be at highway entrance ramps and approaches to signal-controlled intersections. LILCO Exh. 1, Attach. T at 12-25 (Crocker, *et al.*). Results from the traffic analyses of both LILCO and the State show that traffic queues will form upstream from many local intersections in an emergency. Tr. 18,581, 18,735-38 (Lieberman); Tr. 18,794-97 (Hartgen). The experts differ in their opinions concerning the likely length of queues and their impact on the workability of the reception center plan. Queues found by Intervenors were substantially longer than those found by LILCO. However, this resulted from postulated planning bases that anticipate more evacuating vehicles than LILCO does. NY Exh. 5 at 39-45 (Hartgen, Millspaugh).



The Board does not accept Intervenor's queues of extraordinary estimated length for the purpose of assessing LILCO's plan because they are based on an assumption of effectively unlimited population of evacuating vehicles. Intervenor estimated queue lengths by determining the hourly excess of demand, assigning the excess to queues, and multiplying the hourly excess by 12 to obtain a resultant queue after 12 hours. No allowance was made for the likelihood that the demand will not be constant for that period, because Intervenor assumed a very large excess population over that anticipated from the EPZ. NY Exh. 5 at 48-49 (Hartgen, Millspaugh). LILCO allowed for a pulse-like distribution of demand arising from the EPZ over a 6- or 9-hour period. In this model, which we take to be more realistic, vehicle demand rises to a maximum and then declines as the evacuation of the EPZ is completed and demand for service is satisfied. LILCO Exh. 1, Attach. T at 26-29 (Crocker, *et al.*). The queues follow the same pattern, first growing and then dissipating in the 6-hour scenario, while none form in the 9-hour scenario.

The Board accepts the findings of both parties that queues will form at intersections near the reception centers but does not accept that queue formation will directly inhibit or interfere with the planned monitoring operations at the three reception centers. The monitoring operations will draw vehicles from the head of the queues near the reception centers while later-arriving vehicles will join queues at the tail end. Tr. 18,577 (Lieberman); Tr. 19,085-86 (Urbanik). An intersection serves traffic at its capacity from the front end of the queue even though drivers within the queue may perceive that traffic has stopped. Tr. 19,048-49 (Urbanik). The length of queues, therefore, has no general, applicable bearing on the rate with which the monitoring operation can be conducted or on the further capacity reduction of intersections already saturated.

Further, Intervenor's finding that long queues will form is consistent with LILCO's finding that monitoring capacity within the reception centers is the rate-limiting process for serving evacuees. The queues form a ready reservoir of vehicles to supply the centers. Put simply, the centers cannot run out of work to do while vehicles waiting for service are present. Tr. 18,581 (Lieberman).

Intervenor objects that queues will back up from the centers to block upstream intersections. LILCO found that the queues will not be long enough for that to happen, but, in any event, police control will be present to prevent it if they are wrong in their assessment. Tr. 18,586-88, 18,738 (Lieberman). The validity of LILCO's assessment, however, is not dependent on prevention of blockage in upstream intersections. The only meaningful blockage is that which would interfere with another evacuation stream going to another center with sufficient impact that the inflow rate becomes less than the monitoring rate for that center. That is unlikely. Tr. 18,586-87 (Lieberman); LILCO Exh. 1, Attach. T at 27 (Crocker, *et al.*). Traffic backup affects the total capacity of the intersection, not the capacity for evacuation traffic. If upstream intersections become clogged



with evacuation traffic, the impact will be predominantly on the crossing traffic not going to reception centers. Tr. 19,013 (Urbanik).

The Board concludes that queuing under emergency conditions is not a serious concern for monitoring evacuees, except under speculative circumstances. Police control will lessen the likelihood that intersecting queues could interfere with evacuation traffic flows among centers. The testimony of opposing parties combines to convince us that evacuation traffic will dominate the scene for many hours (6-9 hours in LILCO's scenario) in the vicinity of reception centers. It is reasonable to infer that purposes of other travellers might well be temporarily frustrated by the traffic congestion. Even if true, this has no bearing on dose reduction, and we may not deny or condition a nuclear power plant operating license for the purpose of preventing that possibility.

The Board concludes from the queue analysis of opposing parties that LILCO correctly found that the ultimate capacity to monitor the number of evacuees in its plan depends on the rate with which the reception centers can monitor them, and not the capacity of the road system to deliver evacuees to the centers.

#### *Signal Timing*

The capacity of intersections for evacuation traffic depends on the degree and mode of traffic control that can be relied upon. In LILCO's analysis, that control will be provided by traffic signals and the Nassau County police. In LILCO's view and the Staff's, the performance or timing of traffic signals is largely irrelevant to the question of intersection capacity in an emergency because the police will adjust capacity to take account of the evacuation traffic. Tr. 18,738-39 (Lieberman); Tr. 19,096-98 (Urbanik). No party has alleged that key intersections near reception centers lack the intrinsic capacity to serve the evacuation flow. The litigation addressed the effectiveness of control that can be relied upon. Intervenors focused this part of their critique on the alleged inadequacy of LILCO's assessment of traffic-signal function in an evacuation, since they deny that police have familiarity with the appropriate control strategies or that they will even agree to participate in a radiological emergency.

The Board is not permitted to consider the possibility that police will not assist the public in a Shoreham emergency. CLI-86-13, *supra*; 10 C.F.R. § 50.47(c). That fact standing alone might be sufficient to resolve any issue related to capacity of intersections since no party thought that police control would be ineffective except on grounds of unfamiliarity with LILCO's plan which is easily remedied.

Nevertheless, LILCO performed an analysis of traffic signals as part of the overall traffic analysis for reception centers, the issue was vigorously litigated, and the parties submitted proposed findings on the issue. The Board concludes that issues surrounding traffic-signal timing should be resolved on the merits

because there could be some intersections that would go unattended by police for reasons other than recalcitrance (Tr. 19,140 (Urbanik)) and because traffic-signal data formed a part of the input to the HCM model that LILCO relied on for its demonstration of adequacy of the reception center plan.

In the absence of police, the capacity of signal-controlled intersections depends on the amount of green time that will be available to evacuees who will be traveling in preferred directions toward the reception center. Maximum and minimum green time was measured by KLD observers at the intersections studied, for the initial analyses. Later the State supplied actual signal settings which KLD compared with its measured values. LILCO Exh. 26 at 14; Tr. 18,744 (Lieberman). KLD used the State data in a subsequent analysis, unless the field data showed that longer green time actually existed than was shown in the State records. Tr. 18,606 (Lieberman). More weight was given to the measured values because signal-dial-setting records are not always accurate. Tr. 18,607 (Lieberman).

Intervenors claim that actual signal settings should have been used for signal timing in that the settings would provide more accurate data than field measurements. NY Exh. 5 at 22; NY Exh. 6 at 10; NY Exh. 7 at 9 (Hartgen, Millspaugh). The State experts claim this to be so because the signals are traffic actuated, and the green time in any particular direction varies, between preset limits, as a function of actual traffic flow. Because the signals have variable timing, an observer allegedly cannot reliably obtain maximum green times from field measurements. Tr. 18,892 (Millspaugh).

LILCO asserted that, even if true, the error is not large enough to alter its conclusion that monitoring rates at reception centers are the rate-limiting step in the process. Tr. 18,745 (Lieberman). Additionally, says LILCO, the signal settings are sometimes changed in the field without record, and the State records might not be reliable. Tr. 18,607 (Lieberman). The NRC Staff agreed. Tr. 19,115-16 (Urbanik). The State could not confirm that its signal records were accurate. Tr. 18,888 (Millspaugh). The State experts pointed to several intersections where they thought that KLD had used values that overstate green time and thereby inflate the capacity of the intersection. NY Exh. 6 at 10; NY Exh. 7, n.5.

The Board concludes that the record is inconclusive regarding the possible existence of error in the signal timing used to analyze the capacity at some specific locations because there are possible sources of error both in direct measurement and in the State records. The NRC Staff asserted, however, that field measurements are accurate at actuated signals if queues are present when the measurements are made. Tr. 19,115-16 (Urbanik). KLD says that it took measurements while heavy traffic was present so that the signals would be actuated to their maximum phase duration. Tr. 18,607 (Lieberman). There is evidence, therefore, that the signal measurements taken by KLD were reasonably

accurate, although uncertainty remains because the measured values do not always agree with the State signal settings which might themselves be in error. The Board concludes, from the fact that the actuated signals have a preset upper limit of green time, that the most probable systematic error, if any at all exists, is by underestimating rather than overestimating maximum green time.

If measured values have systematic error, it is likely to be by generally underestimating maximum green times, since a capable worker could not observe more green time than the actual (as opposed to the nominal) preset upper limit of the signal would permit. The only uncertainty is whether measurements were taken at the signal's preset maximum. If they were not, the measured values would be shorter than the true values. The likelihood of this kind of error is small, however, because measurements taken of traffic-actuated signals where queues are present would likely be with the signal activated to its longest phase. Moreover, the error of underestimation is harmless to LILCO's capacity analysis. KLD was therefore reasonable in favoring measured times where they exceeded the State's recorded signal settings.

The likely direction of possible error in measurement favors LILCO's case because, if the true maximum green times are in reality longer than LILCO used in its analysis, the capacity of the respective intersections would be somewhat larger than LILCO found. Further, the magnitude of error in the opposite direction, asserted by Intervenor for specific intersections, would not reduce the intersection capacity enough to alter the conclusion that reception centers are the rate-limiting step in the overall monitoring process. Tr. 18,608-10 (Lieberman).

The Board finds no evidence, however, that the existing signal phases near reception centers are optimal for the special case presented by an evacuation. LILCO's analysis is therefore accepted as a general demonstration of capacity of intersections to cope with evacuation traffic and not a specific prediction of future events. Police should be present at key intersections in an actual emergency to ensure that their capacity is fully utilized for moving evacuees toward reception centers. The Board concludes that any possible errors in the signal-timing data used by LILCO are not of such magnitude as to invalidate its conclusion, that controlled intersections in the vicinity of reception centers have the capacity to serve the traffic flow encompassed within its planning basis.

#### *Turn Movements*

Part of the intersection capacity estimate depends on the proportion of traffic making turn movements rather than passing straight through the intersection. LILCO measured background flow using traffic-counting machines that use a tube placed in the road to detect passing vehicles. At several intersections the tube was placed in a lane that permitted drivers to turn or go straight after the tube was passed. The machines could not record the proportion of turning



vehicles. Tr. 18,634-36, 18,741 (Lieberman); Tr. 19,117 (Urbanik). The missing information was obtained by observers who recorded the proportion of turning vehicles at intersections. Tr. 18,639-40 (Lieberman). Intervenors fault this procedure, arguing that turn movements obtained by machine should have been used because such data are more accurate than data taken by observers for short time periods. Intervenors allege that LILCO's use of observer data resulted in biasing estimated capacities of some critical intersections to make LILCO's case appear more favorable. NY Exh. 7 at 5 (Hartgen, Millspaugh). LILCO asserted that there were intersections where the machine could not distinguish turning movements and that, when it modified its initial estimates with observer data, it found 13 of 28 cases where turn movements were lower than originally estimated and 15 of 28 cases where the turn frequency was higher. When all the data are considered, no bias is evident. LILCO Exh. 51 at 2 (Lieberman).

The Board finds no evidence that LILCO's turn-movement data were deliberately biased to make its traffic analysis appear more favorable than warranted. LILCO has adequately explained why it was necessary to supplement traffic data obtained by machine with turn-movement data obtained by observers. The actions taken by LILCO in revising its estimates of turn movements were efforts to refine a complicated analysis. It was not credible for Intervenors to assert that machine data are invariably more accurate for turn movements, considering the obvious limitations of the counting machines for distinguishing turns in lanes that permit either straight through or left-turn movements. The Board concludes that there is nothing in LILCO's assessment of background turning traffic that causes doubt concerning the capacity of critical intersections to serve reception centers at the required rates.

The State argued that the plan is unworkable at some critical intersections because LILCO assumed that left turns required to reach reception centers are planned from two lanes instead of one as permitted by lane markings and signals. The critical locations were identified as the intersection of Route 107 and old Country Road and the intersection of the LIE South Service Road and Willis Avenue. NY Exh. 6 at 6-7 (Hartgen, Millspaugh). LILCO asserted that it is reasonable to assume left turns from two lanes in an emergency even though not permitted routinely, and that police will be present to control this movement. LILCO Exh. 51 at 3 (Lieberman); Tr. 18,534-41 (Lieberman). However, the adequacy of intersection capacity is not dependent on an assumption of the use of two lanes at critical intersections since the left-turn capacity of one lane is adequate to serve the centers if police traffic control is present. Tr. 19,097-98 (Urbanik). The NRC Staff in fact asserted repeatedly that control at critical intersections should be provided. Tr. 18,981, 18,986, 19,150 (Urbanik). Intervenors do not disagree with the conclusion but assert that police participation in emergency response in Nassau County cannot be ensured because there are no agreements between the County and LILCO, and the County

police have not reviewed the plan. Tr. 18,660 (Lieberman); Tr. 19,147-49 (Urbanik); SC Exh. 22; Governments' Proposed Findings at 244-46.

A flurry of controversy erupted as to whether KLD had conducted its analysis of traffic under the assumption that police control would be unnecessary for implementation of the reception center plan. It appears that active control was not assumed for the purposes of the analysis although police control was recommended. LILCO Exh. 1, Attach. T at 33 (Crocker, *et al.*). The Staff was uncertain on the question of how the analysis was conducted although it was certain that police control of, at least, a few intersections would be necessary. Tr. 18,980-82, 18,986-88, 18,998-19,001, 19,109-10, 19,129-30 (Urbanik).

In the circumstances of this case, it was reasonable for KLD to conduct its analysis as it did, even though police control of traffic in an emergency is clearly preferable to not having it. The analysis performed by KLD is a worst-case analysis that shows in LILCO's view that the system would work adequately with traffic signal control alone. Even though that result might be valid, however, all experts agree that police control will produce a more satisfactory result. KLD's analytical approach was consistent with its uncertainty, which was shared by all parties and the Board, as to how the legal authority and government participation questions in this case would ultimately be resolved. However, it is not for technical witnesses to resolve those issues either explicitly or implicitly in testimony. The witness apparently did the best he could under the circumstances. That effort did not result in bias, however, because the analysis presented was less favorable to LILCO's case than one assuming police control would have been. The matter of the assumptions used in KLD TR-201A is now immaterial to the resolution of issues because the testimony demonstrated convincingly that police control of critical intersections should be provided in an emergency.

The Board concludes that LILCO's estimate of capacity of critical intersections was not dependent on its assumption of left turns from two lanes since, with police control, adequate capacity to serve reception centers exists even if turns from one lane are assumed. The Board agrees with Dr. Urbanik that police presence at key intersections in an emergency renders technical disputes about left turns from one or two lanes, or about signal timing, inconsequential. Tr. 18,977, 19,007, 19,137 (Urbanik). The dispute about the number of left turn lanes to be utilized reduces to a question of intersection management in an emergency, which is a part of what police do. The evidence shows that intersections throughout the network have the capacity to deliver traffic to the reception centers at a rate well in excess of that needed to keep them continuously supplied with vehicles during an emergency. LILCO Exh. 1, Attach. T at 21-25 (Crocker, *et al.*). This is also true for critical intersections even if the police decide at the time of an emergency to restrict turning movements to one lane. The Board concludes that LILCO's capacity analysis of key intersections in the vicinity of reception centers during an emergency was reasonable, and with police control

at critical intersections, adequate capacity exists to accommodate the number of evacuees in LILCO's plan.

#### *Participation of Nassau County Police*

The Board gives no credence to the possibility that Nassau County Police will not provide assistance to the public in an actual emergency because the "best-efforts" assumption of the Commission and the regulations prohibit such consideration. CLI-86-13, *supra*; 10 C.F.R. § 50.47(c). See also SC Exh. 22, ¶¶ 2, 3; Tr. 19,177-78. LILCO plans to request the assistance of the Nassau County Police Department in an emergency. LILCO Exh. 1 at 37 (Crocker, *et al.*). The record does not reflect whether the Nassau County Police have reviewed the plan for reception centers or are familiar with its provisions. That deficiency can be remedied by providing the police with copies of the most current plan and keeping them informed of changes as they occur. However, prior familiarization or training of police, though desirable, is not crucial to implementation of traffic control. Tr. 18,982 (Urbanik). The Board therefore directs that LILCO provide current copies of its emergency plan as it pertains to reception centers to the Nassau County Police Department. LILCO is also directed to consult directly with the Nassau County Police Department to inform them of the provisions of its emergency plan that involve police participation. Confirmation of these actions prior to the issuance of any operating license is delegated to the NRC Staff; however, refusal of local government agencies to participate in planning will not in itself prevent the issuance of an operating license if the NRC requirements for emergency planning are otherwise adequately met. 10 C.F.R. § 50.47(c).

#### *Future Traffic Growth*

The State experts argued that traffic is growing annually both within the EPZ and outside it and that LILCO's traffic analysis should have taken account of the growth projected for Nassau and Suffolk Counties. NY Exh. 5 at 17 (Hartgen, Millspaugh).

LILCO and the NRC Staff claim that it is inappropriate to consider future growth because emergency planning is an ongoing process. Staff Exh. 3 at 6 (Urbanik); LILCO Exh. 26 at 9 (Lieberman). LILCO claims further that, even if we were to consider projected traffic growth, its magnitude is not as large as Intervenor's claim. LILCO and the Staff state that growth in Nassau County where the reception centers are located will be only a few percent over the next 5 years. LILCO Exh. 26 at 10, Attach. A; Tr. 18,617 (Lieberman); Tr. 19,131 (Urbanik).



Prior to the hearing, the Board admitted Intervenor's testimony on future traffic growth over LILCO's motion to strike because we are obligated to assure ourselves that there are no barriers to emergency planning that cannot be removed prior to license issuance. We observed, however, that LILCO was generally correct in its assertion that future developments must be addressed in the future. Memorandum and Order (Ruling on LILCO's Motion to Strike the Testimony of David T. Hartgen and Robert C. Millspaugh) at 5, June 22, 1987 (unpublished). There was speculative testimony in the hearing over likely future growth rates; however, Intervenor's assert in their proposed findings only that it is not imprudent to consider the matter and that significant future growth can be expected. Governments' Proposed Findings at 267. The Governments asserted that the magnitude of projected growth in Suffolk County could be about 22% by the year 2010. NY Exh. 7 at 19 (Hartgen, Millspaugh). Intervenor's testimony even if accepted as true falls far short of demonstrating a future barrier to implementation of LILCO's emergency plan because LILCO has demonstrated a greater excess capacity over its planning basis than the alleged population growth.

The Board concludes that LILCO's emergency planning for reception centers was correctly based on current traffic data because reasonably predictable growth presents no barrier to future emergency response. NRC guidance provides for future developments by requiring that emergency plans be reviewed and updated periodically. NUREG-0654 § II.P.4 provides: "Each organization shall update its plan and agreements as needed, review and certify it to be current on an annual basis." Section II.P.9 provides in pertinent part: "Each licensee shall arrange for and conduct independent reviews of the emergency preparedness program at least every 12 months." In the absence of uncorrectable barriers, the foregoing guidance applies, and makes clear that the Staff is correct in its assessment that emergency planning is an ongoing process. LILCO will be obligated to periodically review and update its planning for reception centers if an operating license for Shoreham is issued. Intervenor's assertion that projected growth in traffic on Long Island must be considered prior to licensing is correct, but, in the absence of barriers, the regulatory scheme for periodically updating the plan is the applicable provision for changing conditions during the term of the license.

#### *Board Decision*

This is the second occasion we have had to probe the intricacies of the Long Island highway system and its likely function in a radiological emergency. The results we find are similar to those found the first time. As in our Partial Initial Decision, we find that Intervenor's have proved again that uncertainty exists in predicting how traffic will flow in an actual emergency. Many different but

plausible scenarios exist that could materialize in an emergency, some worse than others, but they are all in some measure speculative and not subject to rigorous proof. LILCO has proved that the existing highway and road system has the capacity to deliver the number of evacuees within its planning basis to the reception centers within the time limits prescribed by NUREG-0654 § II.J.12 and that it has assigned an adequate level of resources to accommodate the number of evacuees in its plan. *See infra*. Whatever uncertainties still remain, we are now confident that traffic performance in an emergency has been probed to bedrock. Experts from both sides resorted to speculative answers to traffic questions as the inquiry increasingly focused on minutiae and departed from the settled knowledge of the engineering professions. We have therefore reached the limits of what expert testimony can reliably contribute, if the goal is to predictively resolve all uncertainties about traffic flow in an emergency.

We conclude, however, that that is not the proper goal of our inquiry. A fair demonstration of capability based on existing highway capacity and adequate prior allocation of resources is all that can reasonably be demanded in assessing LILCO's plan, because this is all that the regulations require and all that we can scrutinize without resorting to speculation. That task is formidable, however, and we are aware that experts are not immune from error in performing it. However, in overview, we find that the State experts lost credibility by their assertion of comprehensive error that found fault with LILCO's analysis at virtually every step. Our findings could not confirm the existence of wholesale error in LILCO's analysis, and the record is inconclusive even on individual computations or observations where error might exist. Even a first reading of the KLD traffic analysis would reveal to a professional that it was at least carefully done by experts in the field and worthy of being taken seriously even if there might be individual points of error or technical disagreement. We expected, but did not receive from State experts, a discriminating analysis that would bring to focus significant error or bias if it existed. The State review was not only not discriminating but it brought into litigation every arguable fault, whether significant or not, and in that respect it comported more with the controversial nature of litigation than with objective standards of technical peer review.

When stripped of the imperatives for advocacy, however, the findings of the opposing experts regarding technical aspects of traffic movements toward reception centers reasonably coincide. Painted in broad strokes, and with only insignificant variation, the experts from both sides produce an emergency traffic picture characterized by congested, slow-moving, stop-and-go traffic with frequent queues. Both sides find that traffic queues will extend upstream from key intersections and that police control and direction of traffic will be needed to facilitate turns and to keep intersections clear. The disagreement reduced to conflicting opinions about planning details and subjective interpretations of severity and consequences of those conditions during an emergency.

The subjective opinions of Intervenor's experts also lost a measure of credibility, in the Board's view, on the question of the consequences of congestion on traffic movement. Their testimony, taken as a whole, invited the Board to a concluding inference that when traffic demand reaches or exceeds road capacity ( $V/C = 1$ ), street and intersection function is effectively lost or grossly diminished so that LILCO's plan would be unworkable. In reality, however, the road network retains capacity to function under those conditions. We expect experts in the field to know that. It is the road capacity that exists under congestion (as opposed to full unimpeded capacity) that LILCO relies on for its conclusion of adequacy of traffic flow in emergency conditions. Intervenor's experts did not explicitly acknowledge that reality, but instead emphasized subjectively that traffic conditions will virtually always be worse than LILCO found. LILCO's consultant, however, candidly acknowledged the results of its analytical findings which showed difficult, congested traffic conditions in an emergency. The Board concludes that the KLD analysis was not biased to favor LILCO's prospects for gaining regulatory approval of its plan.

The standard of decision we employ is one of reasonable assurance that public health and safety can be protected in an emergency. The standard of public health protection is that the plan be adequate to achieve an unquantified dose reduction to the public in an emergency. Those standards do not require the submission of a theoretically optimal plan nor do they require resolution of all predictive uncertainty about how future emergencies will unfold. The standards can be met by a practical demonstration of existing capability, without regard to all possible future contingencies, if the underlying analysis is reasonable and does not depend on flawed or distorted data or assumptions. We conclude that LILCO's traffic analysis was grounded on reasonable assumptions, data, techniques of analysis, and interpretations, even though other data and methods might have been used. We have not found gross or disabling error in its analysis. The Board is convinced from LILCO's analysis that sufficient highway and reception center capacity exists so that traffic problems will not frustrate the timely monitoring of the number of evacuees in LILCO's plan. The Board therefore finds reasonable assurance that implementation of LILCO's reception center plan would achieve significant dose reduction for affected populations in an emergency at Shoreham. The concern of the Appeal Board that caused this issue to be remanded, we believe, has also been resolved. LILCO's reception centers are not beyond the reach of the persons they are set up to serve. The overall analysis further shows that LILCO's choice of reception centers was not flawed on account of transportation or traffic problems that might arise from their location and distance from the EPZ. We determined separately in this decision that LILCO's planning basis was adequate and that there is no regulatory reason for requiring that some other planning basis be adopted. There is therefore no need to scrutinize with equal care the traffic consequences of Intervenor's



traffic models which were based on larger populations than used by LILCO. The Board finds reasonable assurance that the traffic plan for reception centers LILCO submitted is workable and would help ensure the degree of protection of public health and safety required by NRC regulations.

### 3. *Distance of Reception Centers from EPZ Issues*

Two additional issues designated for hearing relating to the location of the reception centers were:

Whether the [reception centers'] location[s] might create problems in regard to the evacuation shadow phenomenon; and whether the distance of the [reception centers] from the plume EPZ would increase exposure to radiation, causing additional problems.

We address each of these matters in turn.

#### *The Evacuation Shadow Phenomenon*

The presence or absence of a shadow evacuation has, of course, been the subject of extensive litigation in this case, and our earlier Partial Initial Decision addressed it. LBP-85-12, *supra*, 21 NRC at 655-71. There, however, we dealt with the phenomenon as it would be met were there no aggravating circumstances. Here, Intervenor's allege that the placing of the reception centers at a considerable distance from the EPZ will increase the chance that a shadow evacuation will occur. They reason that evacuees seeking to escape a disaster will attempt to find a place of refuge that is far enough from the danger. With the reception centers located 40 miles from the plant, many people between the plant and the reception centers will perceive that they are in an unsafe area because the designated safe refuge centers are farther from the plant than they are. SC Exh. 15 at 10, 12 (Johnson, Saegert). The result will be a greater tendency to evacuate, and an expansion of the geographic scope of the evacuation shadow phenomenon. *Id.* at 11-12.

The County's witnesses believe that what they call "spatial factors" are important in determining behavior in a radiological emergency, where environmental cues, such as flood waters or noxious gases, do not provide sensory evidence defining the zone of risk. *Id.* at 11. In the absence of such cues, they believe the location of the reception centers will become a "primary objective factor" in defining the zone of risk. *Id.*

The County's witnesses also argue that the reception centers will constitute a "locally unwanted land use" in the view of the people in surrounding towns. The centers will be perceived as presenting a threat to those in the towns and, in the event of a radiological emergency, people will attempt to evacuate from

the areas surrounding the centers, adding to the congestion and further delaying the arrival of the evacuees from the EPZ. *Id.* at 17-19. NY Exh. 5, Attach. 3-6, is cited for the fact that the surrounding area is heavily developed.

LILCO's witnesses tell us that the perceived area of risk (and hence the "shadow") is determined by the information the public hears, not by the position of reception centers or shelters. LILCO Exh. 1 (Mileti) at 25. LILCO would also characterize as "circular" the reasoning of County witness Johnson, who believes that the reason the reception center at TMI was little used was that people saw it as too close (10 miles) to the plant, but who also believes that the distance of a reception center will help define the zone of risk. LILCO Proposed Findings at 37, *citing* Tr. 17,883, 17,885; LILCO Exh. 9. We do not think such reasoning necessarily circular; the County's witnesses have repeatedly expressed the view that people so fear radiation that 10 miles seems close in a nuclear accident. The notion that, for larger distances, the public might view the position of a reception center as a factor in determining "how far is far enough" is not illogical.

LILCO would also have us decide that Intervenors' argument about the position of reception centers is a challenge to the Commission's rule that the EPZ should extend "about ten miles." LILCO Proposed Findings at 37. We do not see it as such a challenge. We see the dispute as centered around the issue of human behavior and the need to provide for an enhanced degree of voluntary evacuation.

As to the theory that this "local unwanted land use" will cause people to evacuate the area around the reception centers, LILCO's witnesses believe that the evidence is "overwhelming" that people do not flee from places simply because those places involve some sort of radiological activity. LILCO Exh. 1 at 23 (Lindell, Mileti). They note that experience at TMI, Love Canal, and Times Beach showed that people only leave hazardous areas after the hazard has been defined by an "authoritative source." *Id.*

The NRC Staff treats the "shadow evacuation" phenomenon as simply part of the overall traffic picture. The Staff points out that the traffic analyses that LILCO relies upon assume Level of Service F on all roads along the evacuation routes. Staff Proposed Findings at 44-45, *citing* LILCO Exh. 26 at 11 (Lieberman). Thus the bulk of any "shadow" traffic would enter the highways behind vehicles from the EPZ and would have a limited effect on those vehicles' arrival times. *Id.* The Staff's witness on traffic matters testified that "shadow" traffic in general has been considered in evacuation time estimates. *Id.*; Staff Exh. 3 at 5 (Urbanik); Tr. 19,014-15.

### *Board Decision on Evacuation Shadow Phenomenon*

We treated the evacuation shadow phenomenon extensively in our earlier Partial Initial Decision (LBP-85-12, *supra*, 21 NRC at 655-71). There, we found that "a rational public will behave predominantly in accordance with public information that is disseminated at the time an emergency happens." *Id.* at 670. We do not believe that so small (and likely so recondite) a matter as the distance from the EPZ to the reception centers could shake our earlier conviction to any great degree. We noted then, and we repeat here, that a "shadow" could develop if confused or conflicting information is disseminated to the public, but we do not think that distance to the reception centers will be the straw that breaks the informational camel's back.

The Staff's argument we regard as a makeweight. It is hard to see how the minor effect we would expect from an evacuation shadow could strongly influence transit times in the face of a Level of Service F assumption on the part of the planners.

Here we find LILCO has carried the day.

### *The Increase in Radiation Exposure*

Intervenors' witness Dr. Radford notes that the dose an individual receives from radioactive contamination is a function not only of the amount of radioactive material deposited but also of the time that elapses before the contamination is removed. Governments' Exh. 16 at 32 (Radford). Thus any delay in decontamination will be reflected in an increase in dose for the people who receive contamination in the EPZ. If the arrival of contaminated individuals at the reception (and decontamination) centers is delayed because these centers are far from the EPZ, their dose will be increased. Dr. Radford then calculates, for an individual whose dose would have totaled 5 rad after a delay of 10 hours, the dose would total 10 rad after a delay of 20 hours. Similarly, lengthening the time until decontamination from 10 to 20 hours would turn a 10-rad dose into a 20-rad dose. *Id.* at 34.<sup>13</sup> Dr. Radford then asserts that these increases would increase the chance that an individual would develop cancer by 3.5% and 7%, respectively. *Id.* He gives no reason why his assumed doses are in the region of 0.5 to 1 rad per hour, nor does he explain what the corresponding doses from plume or ground contamination exposure would be. He says only that the doses due to contamination "could be highly significant in comparison to the direct radiation from the plume." *Id.*, n.85.

<sup>13</sup> As LILCO correctly points out in its proposed findings, this assumption of a linear relation between dose and time is an approximation. It would only be correct for contamination composed of radioisotopes of relatively long half-life, that is, half-life long compared to the times used in the example. For shorter-lived materials the increase in dose would be less. LILCO Proposed Findings at 35.

LILCO's witnesses, Linnemann and Watts, testified that, on the contrary, "[a]s a general matter, the dose received from the contamination on a person's body is small compared to the dose he received from having been in the plume in the first place, even if it is several hours before he or she gets decontaminated." LILCO Exh. 1 at 38 (Linnemann, Watts). On the basis of the scenario used in the February 1986 exercise, these witnesses calculated the dose an individual would receive during a 20-hour delay for decontamination after a 3-hour exposure to the plume. They used standard health physics formulas. Dose from the plume prior to evacuation under these circumstances would be 180 millirem; that from the residual contamination prior to its removal would be 9 millirem, about 5% of the plume dose. *Id.* They also calculate the increase in thyroid dose due to delay in decontamination for the same scenario. They obtain similar results — about a 4% increase. *Id.* at 39. These witnesses stress that the additional doses would not result in any "acute, detectable" effects on the whole body or the thyroid gland. *Id.*

While Intervenors' witnesses do not credit the calculations of witnesses Linnemann and Watts, they produce no real alternative. They simply state that higher doses are "entirely possible" but present no scenario for evaluation. SC Exh. 16 at 35 (Radford). Cross-examination of FEMA witnesses elicited the fact that the particulate release postulated for the February 1986 exercise was not very high, although the iodine release was substantial. Tr. 18,413-14 (Keller). During that same cross-examination the FEMA witness opined that the incremental exposure incurred by delay in decontamination would "[g]enerally speaking . . . not be a medically significant increase," although there might be some scenarios wherein people located especially close to the plant in a very severe accident would experience a significant dose increment. Tr. 18,415 (Keller).

#### *Board Decision on Increased Exposure to Radiation*

We are faced here by a direct conflict in the testimony of expert witnesses, the County's witness saying that the distance to the reception centers could result in significantly increased doses and LILCO's witnesses (and FEMA's) saying that such a result is extremely unlikely. In order to resolve the conflict, we must look quite closely at the basic assumptions involved in the two positions. To begin with, all the witnesses assumed delays of 20 hours, a very substantial delay considering the distances involved. Secondly, the County's witness assumed larger releases than did the witnesses for LILCO, releases much larger, indeed, than those hypothesized for the exercise of February 1986. Finally, and perhaps most important, the two groups of witnesses applied different standards to the determination of what is "significant": LILCO (and FEMA) deem an increment of exposure "significant" only if it is large enough to cause immediate medical



damage. Tr. 18,294 (Keller); LILCO Exh. 1 at 39 (Linnemann). The County's witnesses deem a dose increment "significant" if it causes a few percent increase in the probability of cancer. SC Exh. 16 at 34-35 (Radford). The County's witnesses also envision far larger releases than LILCO's witnesses, but without enlightening us as to how those very large releases could come about.

We cannot believe that the Commission's standard of "no undue hazard to the health and safety of the public" could be meant to establish a requirement that there be no increment whatever in projected cancer probabilities for conceivable accidents whatever their size. Such a standard could not be met for any plant. Indeed, the Commission's Policy Statement on Safety Goals for the Operations of Nuclear Power Plants (51 Fed. Re. 30,028 (1986)) suggests that even the risk of prompt fatalities would not be excluded for extremely improbable accidents.

We accordingly find that the fact that the reception centers at Shoreham are located some 40 miles from the plant does not, through the mechanism of delay in decontamination and the resulting possible increase in radiation dose, disqualify them from their intended use.

#### *4. Monitoring-Related Issues*

The issues considered involving LILCO's plan to send evacuees to its newly proposed shelters and the adequacy of staffing allocations raised questions concerning the viability of LILCO's monitoring and decontamination procedures. During the hearing, changes to accommodate adverse FEMA RAC comments were made to Revision 8 of LILCO's emergency plan and admitted into evidence without objections. February 1987 Revision, LILCO Exh. 1, Attach. P.

The basic LILCO monitoring and decontamination scheme is designed to operate in the following manner: sixty-three monitoring stations for registering, monitoring, and decontaminating evacuees are to be established at the Roslyn, Bellmore, and Hicksville reception centers, with each station manned by two monitors and a traffic guide. Vehicles are directed by traffic guides to monitoring stations where monitoring of evacuees will be performed while seated in automobiles. Monitors located on both sides of cars will scan the head, shoulders, hands, and feet of each passenger while the traffic guide takes a swipe of part of the car's hood and wheel well for signs of contamination. The traffic guide will also record, for registration purposes, each vehicle license plate, number of passengers and whether clear tags for noncontamination have been issued a car and all its passengers. If an automobile or any passenger shows any contamination, everyone in the vehicle will be directed to a decontamination trailer for additional monitoring. It is planned to monitor all passengers and a vehicle within 100 seconds, the time based on an estimated 2.8 passengers per vehicle.

Evacuees without private transportation will be taken by bus to the Hicksville reception center for monitoring. Each bus passenger will be scanned front and back in an "X" pattern while standing, a procedure completed in 60 seconds of time. If contamination is found, the individual will be sent to the decontamination trailer. The program calls for one trailer to be located at the Bellmore and Roslyn centers and two at Hicksville. Trailers are equipped with showers and wash basins for washing exposed skin surfaces, and paper clothing for those requiring it. Detailed information on the decontamination and procedure used for each individual in trailers is to be compiled.

The Applicant contends that 20% of the EPZ population can be monitored through its procedures in 5 to 6 hours and over 46% during a 12-hour period.

LILCO presented as witnesses Douglas Crocker, Diane Dreikorn, Dale Donohue, Michael Lindell, Dennis Milet, Richard Watts, and Roger Linnemann. Intervenor's witnesses for Suffolk County were Edward Radford, Gregory Minor, Susan Saegert, James Johnson, Jr., David Harris, and Martin Mayer; and for New York State, James Baranski, Lawrence Czech, and James Papile. FEMA's witnesses were Thomas Baldwin, Ihor Husar, and Joseph Keller. The Staff presented no witnesses.

Intervenor's witnesses contested the procedures used by LILCO for monitoring and decontamination and the time period assigned for completing the process. The Intervenor's case raises the issue whether limited monitoring of evacuees in automobiles will miss areas of contamination on the lower back, back of legs, abdominal area, and the buttocks and it is contended that a scan of the entire body alone will provide assurance that all significant areas of contamination are detected. In proposed findings, Intervenor's argue that the limited scanning procedure and in-vehicle monitoring were designed by LILCO to curtail time in order to meet the regulatory 12-hour standard of § J.12 in NUREG-0654 and that such an expediency is inconsistent with safety standards and cannot be approved. Government's Proposed Findings at 88-91. The claim is made that only a whole-body scan will ensure contamination detection and that a whole-body scan cannot be done correctly in less than 2 to 3 minutes per individual. NY Exh. 1 at 23 (Papile, *et al.*); SC Exh. 16 at 27 (Radford, *et al.*). Intervenor's also contend that thyroid monitoring, only provided in LILCO's plan for persons where contamination has been detected, should be required for all evacuees. Treatment with potassium iodide (KI) can be helpful, Intervenor's allege, if radiation iodine is detected within a few hours after exposure. Tr. 18,040-41 (Radford). The Intervenor's also criticize LILCO's automobile monitoring plan, stating that adequate procedures require a scan of most of the outside surface of the vehicle as well as the vehicle's trunk. Radford SC Exh. 16 at 12. LILCO's plan is to monitor inside of trunks only if contamination is found on passengers or the vehicle.

backup monitors to provide relief in cases of stress or fatigue, LILCO claims to have arrangements with INPO and Brookhaven Laboratories to provide additional personnel monitoring assistance if the number of evacuees reaches 30%. If such additional help is not sufficient, LILCO's fall-back procedure is to monitor only the automobile driver, other passengers from different points of origin, and also passengers who request monitoring. Intervenors question the time required to obtain assistance from INPO and the adequacy of the additional personnel to monitor all evacuees within the required 12-hour period. And LILCO's fall-back procedure does not provide, in their opinion, reasonable assurance that the public health and safety will be protected.

An Intervenors' witness testified that it would take 3 to 5 minutes to adequately monitor both a vehicle and its passengers and that traffic obstructions and evacuee delays due to stress and frustration will contribute to making LILCO's 100-second time estimate too low. NY Exh. 5, Attachs. 3-6; SC Exh. 16 at 20 (Radford, *et al.*). Also, Intervenors claim as a deficiency the fact that FEMA does not plan to make findings on monitoring time estimates until an exercise is held. Intervenors also question LILCO's registration procedures on grounds that it may become necessary to contact uncontaminated individuals to verify the use of proper monitoring. With regard to decontamination facilities, Intervenors argue that estimates of the number of those requiring showers are too low, would require more time than provided for, and its backup procedures of sending people to private facilities for showering are inadequate. It claims that delays in detecting cases of contamination will have a public health impact particularly in an accident with significant releases of particulates. SC Exh. 16 at 35 (Radford, *et al.*). The absence of trained medical personnel and first-aid facilities in LILCO's plan, a lack of adequate sanitary facilities and food or water supplies for evacuees, and inadequate sheltering for inclement weather conditions all contribute, in Intervenors' opinion, to negative health consequences. *Id.* at 36-37; NY Exh. J at 68 (Hartgen, Millspaugh). As a consequence of the deficiencies noted, Intervenors conclude that there is no reasonable assurance that adequate measures to protect the public can be or will be taken at the reception centers.

The Staff indicates in proposed findings that the evidence supports LILCO's staffing procedures and facilities as being adequate and as providing the required reasonable assurance. Staff Proposed Findings at 33, 34, and 37. With regard to time estimates, the Staff points out that LILCO's figures of 100 seconds per vehicle were based on actual test trials and that Intervenors provided no empirical basis for their estimate of 3 to 5 minutes. Similarly, allegations concerning evacuees' behavior were discounted on grounds that no supporting data were supplied. *See* Staff Proposed Findings at 33, *citing* Tr. 18,029 (Saegert). Since it concluded that LILCO's time estimates were more reasonable, it found that



evacuees' behavior were discounted on grounds that no supporting data were supplied. See Staff Proposed Findings at 33, citing Tr. 18,029 (Saegert). Since it concluded that LILCO's time estimates were more reasonable, it found that staffing levels were sufficient to provide monitoring for up to 30% of the EPZ population within the 12-hour period called for by § J.12 of NUREG-0654.

In connection with LILCO's monitoring procedure, the Staff pointed out that Intervenor were not opposed to monitoring passengers in automobiles, but merely pointed out certain difficulties connected with it. The Staff noted that FEMA had not reviewed LILCO's revised plan for monitoring, but the evidence of record was sufficient for a conclusion that, although imperfect, LILCO's monitoring method was sufficiently accurate to be acceptable. Staff Proposed Findings at 30. The Staff cited favorably LILCO's estimate of the number of contaminated people requiring showering as consistent with the experience of previous incidents. *Id.* at 36. The Staff noted that no regulatory requirement exists that a certain number of people must go through decontamination within a particular period of time. *Id.* at 34.

It is LILCO's contention that its monitoring method covers those areas where contamination is most likely to be found. They contend that their procedure is conservative in sending all persons for decontamination when any contamination is discovered on any passenger or vehicle and that their 100-second time period has been based on two time trials and a training session. It is also alleged that thyroid monitoring is not likely to be useful by the time that evacuees are at reception centers. Tr. 17,763 (Linnenmann); Tr. 18,037-38 (Radford); Tr. 17,572 (Dreikorn); Tr. 17,555 (Watts).

With respect to conditions for becoming contaminated, LILCO refers to testimony by FEMA witness Keller, and its own witness Watts, to the effect that the most likely place to pick up contamination during evacuation was on the hands and feet, areas of the body covered by LILCO's monitoring method. Tr. 18,001 (Keller); Tr. 14,475-76 (Watts). There was testimony that the areas to be surveyed in vehicle passengers were accessible with cooperation from such persons. LILCO's Exh. 1 at 44 (Crocker, *et al.* Direct Testimony). And, LILCO is also providing a separate monitoring lane for vehicles that due to their model characteristics or number of occupants may be difficult to scan. OPIP 4.2.3, § 5.4.6 (February 1987 Revision). In connection with thyroid contamination, LILCO points to the evidence that it is too late to take any preventive measures when radioactive iodine is in the body and that New York State policy is not to administer potassium iodide (KI) to the public. Tr. 18,037-38 (Radford); LILCO Exh. 1 at 58 (Crocker, *et al.*); Tr. 18,163-64 (Papile).

The Applicant alleges that traffic guides are to be placed strategically to direct evacuees through the facilities, an information sheet will be distributed to evacuees at the centers, EBS stations will also be broadcasting pertinent information, stalled vehicles will be simply pushed out of the way so as to avoid



obstructions, and these procedures will assist LILCO in meeting its monitoring schedule time. Tr. 18,023-28 (Saegert); LILCO Exh. 1 at 47 (Crocker, *et al.* Direct Testimony); Tr. 17,621 (Crocker); Tr. 17,718 (Mileti); *see* LILCO Proposed Findings at 52-54.

On the question of registration procedures, LILCO claims that its record-keeping of full details on individuals going to decontamination trailers and limited recordkeeping on noncontaminated passengers in vehicles is adequate and in keeping with FEMA testimony that detailed information for evacuees not contaminated is not needed. Tr. 18,274-76 (Keller). If necessary, LILCO testimony states, communication with people in noncontaminated groups can be made through license plate numbers or announcements in newspapers and radios. LILCO Exh. 1 at 47 (Crocker, *et al.* Direct Testimony); Tr. 17,715 (Dreikorn). LILCO also contends its monitoring equipment (Eberline RM-14) is a tested and reliable instrument that has been used by industry and also during adverse weather conditions. Tr. 18,435 (Keller); Tr. 17,597-99 (Watts, Dreikorn). LILCO also states that there is no requirement for medical personnel to be available at reception centers, that individuals will only be there for a short — 15-minute — period of time and most of those monitored will not even get out of their vehicles. LILCO Exh. 1 at 54-55, Attach. T at 27 (Crocker, *et al.* Direct Testimony). LILCO's testimony indicates that 20% of the EPZ population can be monitored in about 6 hours and 46.6% in about 12 hours. LILCO Exh. 1, Attach. T at 26-27 (Crocker, *et al.* Direct Testimony); LILCO Exh. 26 at 5 (Lieberman Rebuttal Testimony); Tr. 17,728 (Watts); Tr. 17,744 (Dreikorn).

LILCO contends that it has gone beyond the regulatory requirements of Criterion J.12 in establishing several backup procedures in the event that accident conditions require them. These include increasing the number of monitoring stations from 63 to 140 and bringing in additional monitors from INPO and other federal and private sources. As a secondary backup, as noted, LILCO proposes the alternative of monitoring only the driver or passenger who comes from a different location and anyone else requesting a scan, and finally, as a last alternative, to advise evacuees to proceed to their ultimate destinations to take showers, change clothes, bag old ones and then return for monitoring at a later time if desired. LILCO Exh. 1 at 53, 59 (Crocker, *et al.* Direct Testimony); Tr. 17,664-65 (Dreikorn). This later procedure, it is claimed, is consistent with federal guidance in a draft EPA manual (Ch. 7, June 27, 1986). *Also see* Tr. 17,739 (Watts).

LILCO indicates that its more extended method for monitoring bus evacuees who are standing is designed to accommodate the fact that they will be coming from different places, will be bussed to several different transfer points, and will possibly encounter exposure to cross-contamination while on the buses. This would, in LILCO's view, increase chances that isolated spots of contamination

might not be detected if monitored in the same way as passengers in private vehicles. LILCO Exh. 1, Addendum (Crocker, *et al.* Direct Testimony); Tr. 17,573 (Dreikorn). LILCO contends that having the bus evacuee monitoring station at the center (Hicksville) which is also the locale for the LERO Family Relocation Center is not a problem since only a few hundred family members are expected at the center and the two functions are located in different areas of the facility. LILCO Exh. 1, Attach. J (Crocker, *et al.* Direct Testimony); Tr. 18,434 (Keller).

It is contended by LILCO that the monitoring procedures for vehicles is adequate since driving through a radioactive plume or picking up contamination after a plume has passed would result in contaminants being on the hood or wheel well of the vehicles. Tr. 17,557-58 (Dreikorn, Watts). With respect to monitoring the inside of vehicle trunks, LILCO does plan to accomplish this if any contamination is found on the vehicle or its passengers. LILCO Exh. 1 at 46 (Crocker, *et al.* Direct Testimony).

In connection with decontamination procedures, LILCO plans to have available eight to ten workers at each trailer. *Id.* at 58. LILCO contends that there is no regulation or guidance requiring any particular capacity for decontamination of the public and that its estimate of 10% has not been challenged by any facts. *See id.* at 57; Tr. 17,683-84 (Watts); Tr. 17,686-88 (Linnemann); LILCO Proposed Findings at 67-69. LILCO also contends that its centers have adequate capacity to shelter evacuees, and plans exist for providing additional sanitary facilities, if required, as well as blankets and supplies. *See* LILCO Proposed Findings at 69-70.

#### *Board Decision*

The regulatory standards and criteria applicable to appropriate procedures for the monitoring of contamination in nuclear incidents are set forth in 10 C.F.R. § 50.47(b)(10) and NUREG-0654 § J.12.

Intervenors challenge every phase of Applicant's monitoring plan including the adequacy of its proposed monitoring method for vehicles, their occupants and bus passengers, staffing requirements and monitoring time, the decontamination process, registration procedures, backup monitoring provisions, utilization of the Hicksville center for dual functions, and the monitoring equipment to be utilized. We treat below, in turn, the sufficiency of LILCO's undertaking to meet NRC's regulatory prescriptions in these areas.

The controversy over LILCO's monitoring method centers around whether a scan of the selected parts of the body — head, shoulders, hands, and feet — will miss other areas of possible contamination and whether monitoring of people in vehicles would result in improper scanning and inaccurate results. LILCO's revised provisions for scanning evacuees was designed to overcome deficiencies

in its previous method that, in monitoring only the hands and areas around vehicle and driver, did not receive a favorable review from FEMA. Although there is no uniform method required for a monitoring operation, the evidence of record is convincing that medically significant contamination would be unlikely unless it were picked up by the hands and feet, both of which will be scanned by LILCO's procedures. The probabilities of major contamination going undetected on parts of the body or vehicles other than those to be monitored are too low for us to conclude that LILCO's scanning methods are inadequate. And even though FEMA had not been able to review LILCO's February 1987 revision prior to providing testimony at the hearing, its witness (Keller) testified that the Applicant's monitoring method would most likely detect contamination picked up in the most realistic scenarios, that is, people evacuating through a plume or just after a plume had passed before evacuation. Although the Board would have preferred to have FEMA's review of LILCO's revised procedures in the record, the weight of the evidence indicates that there is nothing unworkable or fundamentally wrong with its current monitoring proposal. FEMA's witness did testify that any local contamination would probably be picked up from contact with previously contaminated objects but that such contamination would not likely be medically significant. *See* FEMA Exh. 2 at 19; Tr. 18,395-400 (Keller).

Although LILCO's method of monitoring occupants in vehicles does pose some physical awkwardness, we cannot conclude that individuals seeking monitoring assistance would not cooperate with instructions from monitors, nor can we conclude that its time estimate of 100 seconds per vehicle is erroneous. The evidence reflects that the method was tested during two separate trials and training session and the time estimates are based on those tests.

Intervenors' criticism that the time per vehicle must be longer was a general assertion with no supporting evidence that it was based on a realistic trial. SC Exh. 16 at 16; NY Exh. 1 at 23-26 (Hartgen, Millspaugh). Actual monitoring time may vary and is not precisely known; however, FEMA has graded an exercise based on 90 seconds per individual albeit without enthusiasm for the accuracy of that number. Tr. 18,420-21 (Keller). According to FEMA, high levels of radiation can be found by monitors in less than 90 seconds, while low levels may require 90 seconds or more to detect. Tr. 18,391-92, 18,420 (Keller). The monitoring time varies inversely with the radiological threat to public health and safety. Tr. 18,391-93 (Keller). LILCO's time trials show that about 100 seconds are required on an average, but when variation from the average is considered, the longest monitoring times are required to detect the least significant doses.

The Board concludes that monitoring time is not defined by any general technical consensus. Neither does any law of nature govern monitoring time, and it is evident that planning can do no more than achieve a rough approximation to the time that might be required in practice. The dispute about monitoring



time in this case appears to depend as much on the parties' perceived need for meticulous measurement as on any more fundamental consideration. The initial monitoring to be done at reception centers, however, is a population screening process. Meticulous measurements will be done for those who are found by the screening process to be contaminated. We infer that, in designing the process, a practical balance must be struck between the need to detect all low-level radiation on each individual and the need to process large numbers of individuals. In monitoring, however, it is the least doses (those near background) that require the most search time to detect, while larger, more health-threatening doses can be found quickly. Under those circumstances we conclude that more total dose can be saved by a monitoring strategy that favors processing large numbers of people than by one that favors meticulous searches for small amounts of radiation on each individual in the initial screening.

The Board cannot confidently endorse the precision or accuracy of any particular average monitoring time because the record reflects little empirical basis and no technical consensus to support it. There is no basis for thinking, however, that LILCO's planning choice of 100 seconds per vehicle and occupants was biased or that it struck the balance between individual and population imperatives improperly. We therefore accept its estimate of 100 seconds as reasonable. Although uncertainty persists, there is no significant remaining opportunity to reduce projected doses to the public by adopting Intervenor's longer monitoring times or by requiring further refinement of LILCO's monitoring time estimates.

The testimony in the record from Intervenor's did not erode LILCO's time estimates in any substantial way, and Intervenor's own estimate of 3 to 5 minutes per vehicle is not based on testing procedures, but more on unverified claims that delays will be caused by vehicle breakdown, behavioral problems, and operator fatigue. LILCO's response to the latent potential of these problems is answered satisfactorily in the Board's view, by its answer that any vehicles breaking down will be simply moved out of the path, behavioral problems will be minimized by supplying adequate public information, and inspector fatigue will be alleviated by having available an excess number of monitors.

The State expressed concern that the reception center sites are small and filled with obstructions, which will cause slow traffic circulation within the sites and lengthen the time needed for processing. NY Exh. 5 at 55 (Hartgen, Millspaugh). LILCO agreed that improvements are needed at the centers and has made or commits to make changes that eliminate the State's concerns. These include widening of a gate at Bellmore, removal of debris from reception center sites, and plans to remove cars and equipment stored on site before evacuees arrive. LILCO Exh. 26 at 35-36 (Lieberman); Tr. 17,646-49 (Crocker). The Board concludes that LILCO's response is adequate.

The adequacy of staff for any monitoring procedure is, of course, dependent on the number of people that can be monitored in a given period of time. Based



on LILCO's time estimates for monitoring, the validity of which we accept here, LILCO calculates it can monitor, with three personnel at each station, 20% of the EPZ population within about 6 hours. We can find no miscalculation in LILCO's figures and conclude that both its staffing arrangements and monitoring method meet NRC's regulatory standards and criterion.

As a final note on LILCO's monitoring method, it is apparently Intervenor's position that, since a whole-body scan is a preferred method for the detection of contamination, NRC's regulations, which look to prudent risk-reduction measures, require that method if it can be accomplished. We disagree. Planning standards and criteria are developed on the basis of selecting reasonable, but effective, protective response actions, and the requirement in monitoring is simply a capability to monitor all EPZ residents and transients arriving at reception centers within a 12-hour period. No requirement exists, that we are aware of, that dictates that a different, even if better, method of detection must be installed even if it is available. This would be particularly valid, where, as in the present case, no substantial deficiencies are present in the system proposed and where further detailed monitoring of all passengers occurs if a vehicle or anyone in it is found to require decontamination.

The Intervenor also challenge the scanning procedure scheduled for bus-carried evacuees at the Hicksville Center, stating that a whole-body scan was required here too. LILCO plans to contemplate a total of twenty-four monitors who will scan each bus passenger standing in the same area as those in private vehicles plus doing an X pattern front and back. This is in recognition that such passengers will come from different places of origin and may have been exposed to cross-contamination while on the buses. The time period estimate is 60 seconds per passenger, and 11,080 people (8% of EPZ winter-time population) are expected to be monitored well within the 12-hour-period standard — about 7.7 hours — of NUREG-0644 § J.12. It is apparent to the Board that Intervenor's objection in this area, where it submitted no testimony, must fail as it does in the area of passengers on private vehicles. The basis of Intervenor's argument again is the limited method of LILCO's scanning procedures as opposed to a full-body scan, as well as the time period allocated for LILCO's preferred method. For substantially the same reasons discussed in connection with scanning of passengers and private vehicles, we find no deficiencies in LILCO's bus-monitoring procedures. Nor do we detect any difficulties with assigning bus passengers to the Hicksville Center, the facility programmed to accommodate LERO family members. The testimony indicates that several hundred family members will congregate at Hicksville, a small percentage of those who would be requiring monitoring or decontamination, and they would be segregated, after monitoring, to a place separated from the monitoring and decontamination facility operations. We are persuaded also by FEMA's testimony that the adequacy of all reception centers will be evaluated in a future exercise, and

that the two functions discussed here should not have a negative impact on each other.

LILCO's decontamination process calls for remonitoring and decontamination of all evacuees sent to any of the four trailers located at three reception center sites. Each trailer contains wash basins and showers, separated to accommodate males and females, and separate dressing areas. There are eight to ten LERO workers planned for assisting in the monitoring and decontamination activities at each trailer. Intervenors' objection to LILCO's decontamination process principally concerns the number of people who may require showering. LILCO has provided showers to handle 10% of 32,000 evacuees (planning-basis number) over the proscribed 12-hour period at a rate of 15 minutes for showering and subsequent monitoring. It appears evident that this number is more than adequate based as it is on 32,000 evacuees being contaminated, a highly unlikely number. The testimony of LILCO's and FEMA's witnesses agree and is convincing that experience demonstrates that the vast majority of people contaminated do not require a full shower, with simple washing effective to remove most contamination.

With regard to other matters raised as objections to LILCO's decontamination procedures, the record is adequate with respect to arrangements providing solutions to the adequacy of facilities for those waiting to be decontaminated, the availability of sanitary facilities and other supplies that may become necessary.

The Applicant has provided several backup procedures for monitoring and decontamination, to be implemented in the unexpected event that the number of evacuees arriving at reception centers exceeds the planning basis. As noted, *supra*, these range from increasing the number of monitoring stations, to adding more monitors from government and private agencies, to restricting monitoring only to drivers of vehicles and others who come from different places of origin, or, finally to sending people to private facilities for showering before returning for monitoring at a subsequent time. We find no requirement that must be met for backup procedures in emergency planning of reception centers, although we do not discourage planning for them in the event necessity dictates their use. However, we see no need to consider their adequacy in depth in this Decision except to state they appear sufficient to address a larger-than-planned evacuee population if one should develop.

In regard to LILCO's registration procedures, the Applicant's plan to record full details of only those going through the decontamination process is criticized by Intervenors as too limited. In their view, registration names of everyone monitored is necessary to protect public health and safety, arguing that all other plans in FEMA's Region II require these data. The FEMA testimony, which we consider persuasive on this issue, is to the effect that detailed information on those not contaminated is not needed. It is needed only for those going through the decontamination process. It appears to the Board that LILCO's

plan to contact noncontaminated individuals, if necessary, through license plates or public service announcements, would more than provide for the unusual event where subsequent communication would be required. LILCO's planned registration procedure is adequate in the Board's judgment.

There are several other areas — lack of medical personnel, thyroid contamination, and monitoring equipment — in LILCO's monitoring procedures that raised Intervenors' skepticism. One contention is that the lack of organized medical personnel at reception centers constitutes a deficiency in LILCO's plan. It is not clear to the Board how medical personnel would be helpful at a reception center that basically acts as a screening station to identify those who might require further medical attention. Other regulatory standards and criteria call for reception hospitals to be available to treat severely contaminated individuals, but for most of those arriving at reception centers, the stay will be brief and the washing to remove contamination will be adequate. Where it is not, the reception hospitals with existing radiation treatment equipment will be the place where medically trained personnel will be available and required.

Intervenors' argument that thyroid monitoring for everyone, not just those found contaminated, should be included in LILCO's plan is based on their belief that thyroid contamination poses a substantial threat to public health and safety and can be easily monitored to provide some treatment protection for some of those contaminated. The fact is that neither federal nor New York State standards require thyroid monitoring, and the use of potassium iodide (KI) for treatment is controversial. According to testimony in the record, if radioactive iodine is already in the body, it is essentially too late to take protective measures, and if monitoring is done too early, no contamination is likely to be absorbed in the thyroid. Under those circumstances, which we believe to be probable ones, and with the lack of any regulatory requirement, we cannot conclude that LILCO's plan is deficient with respect to thyroid monitoring.

And finally, Intervenors refer to the potential for monitoring-equipment difficulties as a reason for discounting LILCO's monitoring time estimate of 100 seconds. The record amply demonstrates that the equipment planned for monitoring use, the Eberline RM-14, is simple to use and its reliability has proven itself under various conditions in other nuclear plants. There is also uncontradicted testimony that the alarm on the RM-14 was available and working satisfactorily during training sessions. The Board finds no deficiency with regard to LILCO's monitoring equipment.

In light of the foregoing, the Board concludes that LILCO's Plan for registering, monitoring, and decontamination of evacuees during a radiological accident and its facility arrangements are adequate to meet the requirements of NRC's regulatory standards and criteria.



### 5. Zoning Issues

In proposed findings, LILCO and the Governments refer to the applicability of local zoning ordinances and Town Resolutions on the use of three LILCO facilities as radiological emergency reception centers. The parties agree that the Towns of Hampstead, North Hampstead, and Oyster Bay (the centers' situs) adopted resolutions declaring LILCO's proposed use of these facilities to be in violation of their respective zoning laws. The Board has been provided with a certified copy of these resolutions by the Governments. The two parties also attest that the Town of Hampstead has an action pending in the State Supreme Court of Nassau County requesting injunctive relief against LILCO in using the Bellmore Center as a reception center.

In all, LILCO asks the Board to find that the Town Board's Resolutions have no conclusive legal status on grounds that there were irregularities in local hearing procedures, that the Towns lack enforcement authority, and finally that the prospective nature of any zoning violations present no current litigable problem. The Applicant also suggests that the Board defer to the State Courts as the proper forum for construing the applicability of local zoning laws and asserts that due process would be denied LILCO by Board enforcement of local government resolutions since no opportunity for a hearing on the issue had been provided. Finally, LILCO alleges that federal law preempts the town resolutions and, that in any event, application of the "realism" principle enumerated in CLI-86-13, *supra*, would ensure that officials would make proper arrangements to overcome any legal zoning obstacles during an emergency. LILCO requests Board certification of the preemption issue to the Commission if the Board's rulings are adverse to its position.<sup>14</sup>

The Governments, citing New York State law granting zoning power to the towns, cities, and villages of New York, urges the Board to take official notice of the Town Resolutions and provide them with the same respect we did earlier in regard to a New York State Supreme Court decision on legal authority issues. *See* Governments' Proposed Findings at 181 n.40. In the Governments' view, since town boards have the authority to determine in the first instance the validity of land uses within their borders, and have so determined here, there is no necessity for us to await the outcome of a New York State Court decision for interpretation of local zoning laws and their applicability to the facts herein. LILCO having failed to apply for a zoning variance with any of the three local jurisdictions or not having received a State Court ruling favorable to its proposed use of the property, the Governments conclude that we must find LILCO's reception centers inadequate to meet NRC regulations. With regard to the preemption issues, the Governments cite judicial authority previously relied

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<sup>14</sup> LILCO Proposed Findings at 118-19; Reply to Governments' Findings at 67-76.



on by the Board, (PID, LBP-85-12, *supra*, 21 NRC at 904), and allege that neither the agency's organic statute nor NRC regulation preempt local zoning laws. See Governments' Proposed Findings at 182-84. On the applicability of CLI-86-13 to the matter here, the Governments claim that a "best-effort" response under these circumstances cannot be construed to legalize an activity illegal under local zoning laws. In our Decision, below, we have not considered, as appropriate, Intervenor's request of October 1, 1987, to respond to LILCO's Reply Findings. See 10 C.F.R. § 2.754(a)(3).

#### *Background*

The issue of possible violations of local zoning ordinances by the proposed use of LILCO's facilities as reception centers was first brought to the Board's attention in a January 22, 1987 pleading of the Intervenor. In a motion for reconsideration of a Board Order on a discovery and hearing schedule, Intervenor suggested that a hearing on the remanded reception center issues be held in abeyance pending some statement from LILCO on a possible substitution for its reception center facilities. The abeyance was required, in the Governments' view, by receipt of notice from two towns that the proposed use of the Bellmore and Roslyn facilities were in violation of town zoning laws. We ruled then that violations of local zoning ordinances are matters to be adjudicated in a State Court and, pending such a ruling, we delayed any decision on the issue until all other issues were resolved. See Board Memorandum and Order, February 9, 1987 (unpublished). In the closing minutes of the hearing on the reception center issue, however, the Board and parties were put on notice by Governments' counsel that they intended to file a pleading dealing with the legality of the use of LILCO reception centers. After discussion among the parties and the Board on whether such a pleading would be considered, the Board stated that it would be bound by its previous Order, *supra*, and would evaluate any problems raised by the pleading at the time it was submitted. See Tr. 19,243. Both the Applicant and Intervenor have now submitted their contentions on this matter in the context of proposed findings and conclusions of law.

The Staff made no reference to the issue in its proposed findings of fact.

#### *Board Decision*

The Board experiences difficulty here in evaluating the Governments' arguments in the context of proposed findings of fact and conclusions of law. Although set forth in form as a legal issue which the Board had previously deferred, the Governments would have us dispose of LILCO's reception center

program by taking official notice of the three Town Resolutions and providing them with immunity against confrontation by other parties in the proceeding. This we are not permitted to do. Although the Board is authorized to take official notice of facts such as certified acts of government bodies, parties obviously affected are entitled under 10 C.F.R. § 2.743(c) to an opportunity to confront the facts noticed. That opportunity is not available through the vehicle of proposed findings submitted to the Board.

Following are the dates where relevant events connected with the Town Resolutions occurred:

- January 14, 1987: Board Order establishing discovery and hearing schedule on reception center issues.
- January 22, 1987: Governments' motion requesting a hearing delay on basis of Town actions giving notice that Bellmore and Roslyn reception centers would violate local zoning laws.
- February 4 and 9, 1987: Board Orders denying Governments' motion and stating it would delay making a decision to see if a State Court ruling on the zoning matter was obtained.
- June 30–July 30, 1987: Eleven days of hearing on reception center issues with no evidence submitted on Town Board resolutions.
- June 9, 23, and 30, 1987: Town Boards of Hampstead, Oyster Bay, and North Hampstead adopt resolutions finding LILCO's proposed use of Bellmore, Hicksville, and Roslyn properties as violation of Building Zone Ordinances.
- July 30, 1987: Governments indicate on final day of hearing their intention to submit motion on zoning matter.
- August 14, 1987: Town of Hampstead files suit to enjoin LILCO from using Bellmore property as a reception center.

The Board is not persuaded by the Governments' contention that the Town Government Resolutions can stand procedurally on an equivalent footing with a New York State judicial decision. That argument has no substance where the Applicant has not had an opportunity to present its side of the issue. The Board is being asked to rule in the Governments' favor on an issue that has no foundation in the record and that other parties have had no opportunity to confront.

We decline to take official notice of the Town Resolutions. The facts concerning the validity of the resolutions are not indisputable, and the issue surfaced here on the reception center controversy could have been raised substantively prior to the close of the record. As we have stated, the basic question on zoning use is now before the State Courts, which is the proper forum for the adjudication of local zoning controversies. We see no reason to act contrary to the intent of our Order of February 9 which was to delay any decision on the matter to ascertain whether a proceeding were to be undertaken

in a State tribunal. Such an action has now commenced. In the event a Court decision is made that is adverse to LILCO's position, the subject can be brought to the Board's attention by any party with the filing of proper motions under the Commission's Rules of Practice.

Although a request to take official notice of a Government action can be raised at any time and we do not view it favorably here, we possibly might alternatively consider the Governments' contention as a motion for summary disposition of the issue. However, even if viewed in that form, such a motion could not be successfully maintained in view of LILCO's challenge of its validity and legal conclusiveness. These are material issues that would require litigation. See Applicant's Reply to Governments' Proposed Findings at 70-72.

Although alleged local zoning violations have not been litigated in this proceeding to date, it is possible that a decision by the New York State Courts on the issue may impact the reception center issue. However, the dimensions of any such impact are not before us now and we refrain from any speculation in that regard.

#### *Board Conclusions*

The foregoing sets forth the Board's findings of fact. Based on these findings, and upon consideration of the entire evidentiary record in this proceeding, the Board makes the following conclusions of law: the Applicant's planning basis, traffic plan, reception center locations, monitoring, registration, and decontamination procedures, staffing plans, and provisions for handling evacuees are adequate and satisfy the NRC's regulatory standards and criteria of 10 C.F.R. § 50.47(b) and NUREG-0654 § II.J.12.

### **ORDER**

On the basis of the foregoing findings of fact, conclusions of law and opinion, and the entire record, it is this 9th day of May 1988, ORDERED:

1. The issues remanded by the Appeal Board in ALAB-832, issues raised by Intervenor, and a population planning-basis issue are resolved in favor of the Applicant as described in this Decision.

2. In accordance with 10 C.F.R. §§ 2.760, 2.762, 2.764, 2.785, and 2.786, as amended, this Partial Initial Decision shall become effective immediately and will constitute, with respect to the matters resolved herein, the final decision of the Commission thirty (30) days after issuance hereof, subject to any review pursuant to the above-cited Rules of Practice. Any party may take an appeal from this Partial Initial Decision by filing a Notice of Appeal within ten (10) days after service of this Decision. Each appellant must file a brief supporting



its position on appeal within thirty (30) days after filing its Notice of Appeal (forty (40) days if the Staff is the appellant). Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), a party who is not an appellant may file a brief in support of, or in opposition to, any such appeal(s).

THE ATOMIC SAFETY AND  
LICENSING BOARD

James P. Gleason, Chairman  
ADMINISTRATIVE JUDGE

Dr. Jerry R. Kline  
ADMINISTRATIVE JUDGE

Frederick J. Shon  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 9th day of May 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman  
Elizabeth B. Johnson  
Cadet H. Hand, Jr.

In the Matter of

Docket Nos. 50-361-OL  
50-362-OL  
(ASLBP No. 87-538-06-OLR)

SOUTHERN CALIFORNIA EDISON  
COMPANY, *et al.*  
(San Onofre Nuclear Generating  
Station, Units 2 and 3)

May 9, 1988

After considering and approving the stipulation of the parties wherein, among other things, the Intervenor declined to request a hearing following a remand by the Commission, and upon consideration of the showing presented by the Licensees and the evaluations of the NRC Staff and FEMA with respect to emergency medical arrangements, in this Order the Licensing Board concludes that there is reasonable assurance that adequate measures to protect the public in the event of a radiological emergency at San Onofre 2 and 3 have been taken.

**ORDER**  
(Resolving Remanded Medical Services Issue)

The Board has reviewed and considered the Interim Findings issued by FEMA on or about November 19, 1987. Said findings evaluated medical arrangements at San Onofre 2 and 3 in conformance with FEMA guidance

set forth in Guidance Memorandum MS-1, Medical Services. The Board has also considered the findings of reasonable assurance of adequate safety set forth in NRC Staff Memorandum of November 19, 1987, issued by the Director, Division of Radiation Protection and Emergency Preparedness, Office of Nuclear Reactor Regulation. Finally, the Board has considered and approved the stipulation (the attached copy excludes the parties' proposed order) of the parties, including Intervenor GUARD, wherein GUARD declines to request a hearing following the Commission's Remand Order of September 12, 1986.

#### FINDINGS OF FACT

On the basis of the foregoing, this Board finds that:

- (1) The purposes of the Commission's Remand Order have been fulfilled, and further proceedings on the medical services issue are not necessary; and
- (2) Based on the Board's review of Licensee's submittals and the evaluations by FEMA and NRC Staff, the Licensees have satisfied the requirements of 10 C.F.R. § 50.47(b)(12) and there exists reasonable assurance that, with respect to emergency medical arrangements, adequate measures to protect the public in the event of a radiological emergency at San Onofre Units 2 and 3 have been taken.

#### CONCLUSIONS OF LAW

Upon consideration of the showing presented by Licensees and the evaluations by NRC Staff and FEMA with respect to emergency medical arrangements, there



is reasonable assurance that adequate measures to protect the public in the event of a radiological emergency at San Onofre Units 2 and 3 have been taken.

THE ATOMIC SAFETY AND  
LICENSING BOARD

Sheldon J. Wolfe, Chairman  
ADMINISTRATIVE JUDGE

Elizabeth B. Johnson  
ADMINISTRATIVE JUDGE

Cadet H. Hand, Jr.  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 9th day of May 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

Docket Nos. 50-361-OL  
50-362-OL

SOUTHERN CALIFORNIA EDISON  
COMPANY, *et al.*  
(San Onofre Nuclear Generating  
Station, Units 2 and 3)

STIPULATION AND PROPOSED ORDER RE  
REMAND OF MEDICAL SERVICES ISSUE

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City of Anaheim, California and  
City of Riverside, California

Dated: March 22, 1988

## I. BACKGROUND

During the course of the operating license proceeding for the above-captioned power plant, San Onofre Nuclear Generating Station, Units II and III (San Onofre 2 & 3) the Nuclear Regulatory Commission (Commission) was called upon to interpret 10 C.F.R. 50.47(b)(12) relating to arrangements for medical services as applied to individuals, including members of the general public. In CLI-83-10, 17 NRC 528 (1983) the Commission determined that the "arrangements . . . for medical services" requirement was satisfied by the development of an inventory of medical facilities available in the area of the plant. In *GUARD v. NRC*, 753 F.2d 1143 (D.C. Cir. 1985) the court found the Commission's interpretation of the regulation was not reasonable and remanded the issue to the Commission for further proceedings.

The Commission, in turn, issued its Remand Order of September 12, 1986, turning the proceeding to this Atomic Safety and Licensing Board (Board). The Commission directed further proceedings be held once the NRC Staff had developed a detailed generic guidance with respect to 10 C.F.R. 50.47(b)(12).

Subsequent to the Commission's Remand Order of September 12, 1986, the Federal Emergency Management Agency (FEMA), in coordination with the NRC Staff, issued Guidance Memorandum MS-1, Medical Services (MS-1). That document provided interpretation and clarification of requirements contained in 10 C.F.R. 50.47(b)(12) and the then-existing associated guidance found in NUREG-0654/FEMA-REP-1, Revision 1, relating to medical services for members of the general public in the event of an emergency.

On January 13, 1987, the Atomic Safety and Licensing Board issued its Order requiring Licensees to submit their showing of implementation of the upgraded emergency medical requirements to the Board, parties, and FEMA by July 1, 1987.

On or about June 29, 1987, there was submitted to the Board and served on all parties "Licensee' Submittal re Emergency Medical Services (10 C.F.R. 50.47(b)(12))."

Subsequently, on or about November 19, 1987, FEMA issued its Interim Finding which reviewed Licensees' implementation of MS-1 at San Onofre 2 & 3. The FEMA conclusion stated

There is reasonable assurance that the plans for medical services for members of the general public who may be contaminated/injured as a result of a radiological emergency at the San Onofre Nuclear Generating Station are adequate and can be implemented as demonstrated in the exercise.

In a memorandum of November 19, 1987, by Frank J. Congel, Director, Division of Radiation Protection and Emergency Preparedness, Office of Nuclear



Reactor Regulation, the NRC Staff issued its finding that "regarding offsite medical services at San Onofre, the Staff finds that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency."

The FEMA and NRC Staff evaluations were distributed to the Board and all parties by letter to the Board of November 23, 1987, from Benjamin H. Vogler, Senior Supervisory Trial Attorney within the Commission.

On December 12, 1987, the Board conducted a telephone conference with all parties, specifically including the attorney for Intervenor GUARD, Charles E. McClung, Jr.

Mr. McClung advised the Board that based on Licensees' submittal and the results of NRC Staff and FEMA appraisals, Intervenor do not desire to raise any further issues with respect to Licensees' compliance with 10 C.F.R. 50.47(b)(12).

## II. STIPULATION

Based on the foregoing facts, it is hereby stipulated, by and between the parties hereto, through their respective undersigned attorneys, that:

1. The Parties hereto have reviewed the relevant documentation on this record concerning Licensees' compliance with 10 C.F.R. 50.47(b)(12) including Licensees' submittal of June 29, 1987, and FEMA's Interim Finding of November 19, 1987.

2. Intervenor GUARD, et al., do not request a hearing on the issue of whether Licensees have met the requirements of 10 C.F.R. 50.47(b)(12).

3. The Board may issue its decision on whether Licensees have complied with 10 C.F.R. 50.47(b)(12) based on the existing record, including prior submittals of Licensees and NRC Staff/FEMA.

Dated: March 23, 1988 DAVID R. PIGOTT  
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ORRICK, HERRINGTON & SUTCLIFFE  
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By: \_\_\_\_\_  
David R. Pigott  
Attorney for Licensees  
Southern California Edison Company,  
San Diego Gas & Electric Company  
City of Anaheim, California  
City of Riverside, California

Dated: March 31, 1988 NUCLEAR REGULATORY  
COMMISSION STAFF

\_\_\_\_\_  
Benjamin H. Vogler  
Senior Supervisory Trial Attorney

Dated: March 24, 1988 CHARLES E. McCLUNG, JR.  
FLEMING, ANDERSON, McCLUNG & FINCH  
24012 Calle de la Plata, Suite 330  
Laguna Hills, CA 92653

\_\_\_\_\_  
Charles E. McClung, Jr.  
Attorney for Intervenors  
GUARDE, et al.

Cite as 27 NRC 576 (1988)

LBP-88-15

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before Administrative Judges:

Charles Bechhoefer, Chairman  
Dr. George C. Anderson  
Frederick J. Shon

In the Matter of

Docket No. 50-409-OL  
(ASLBP No. 78-368-05-OL)  
(FTOL Proceeding)

DAIRYLAND POWER COOPERATIVE  
(LaCrosse Bolling Water Reactor)

May 13, 1988

In a proceeding involving an application to convert a provisional operating license to a full-term operating license, in which the Applicant has shut down the facility and has submitted a proposed decommissioning plan to the NRC, the Licensing Board dismisses the remaining unresolved safety contentions, authorizes conversion of the provisional license to a full-term "possession only" license, and grants the Applicant's motion to terminate the proceeding.

**RULES OF PRACTICE: MOTIONS**

A motion that has not been opposed by any party may be granted on procedural grounds. 10 C.F.R. § 2.707.

**RULES OF PRACTICE: RENEWAL OF LICENSES**

Where a licensee has made timely application for renewal of a license authorizing activities of a continuing nature, the existing license will not be

deemed to have expired until the renewal application has been finally determined. 10 C.F.R. § 2.109.

#### **RULES OF PRACTICE: JURISDICTION OF BOARDS**

In considering a full-term operating license, a licensing board's authority with respect to safety and environmental issues is limited to resolving those matters put into controversy by a party, unless the board should determine that a serious safety or environmental matter exists. 10 C.F.R. § 2.760a.

#### **NEPA: ENVIRONMENTAL IMPACT STATEMENT (NEED)**

The decommissioning of a reactor requires the preparation of an environmental impact statement. 10 C.F.R. § 51.20(b)(5).

#### **NEPA: LONG-TERM STORAGE**

The Commission has made a generic determination that the storage of spent fuel for at least 30 years beyond the expiration of reactor operating licenses will result in no significant environmental impact and, accordingly, no environmental review need be taken of the storage of spent fuel in reactor storage pools after the cessation of reactor operation. 10 C.F.R. § 51.23.

#### **RULES OF PRACTICE: WITHDRAWAL OF LICENSE APPLICATION**

Withdrawal of a license application after issuance of a notice of hearing may be "on such terms" as the licensing board may prescribe. 10 C.F.R. § 2.107(a).

### **MEMORANDUM AND ORDER** (Motion to Terminate Proceeding)

On February 19, 1988, Dairyland Power Cooperative (Applicant or DPC) filed a motion to terminate this proceeding. On March 10, 1988, the NRC Staff filed an answer in support of this motion. The Intervenor, Coulee Region Energy Coalition (CREC), has not responded.<sup>1</sup> For the reasons set forth, we are

<sup>1</sup> The Applicant initially served its motion on CREC at an incorrect address. The Staff served its response to the correct address (insofar as is reflected by the Board's records). Upon telephone request from the Board Chairman, the Applicant agreed to re-serve the Intervenor at the correct address. More than 30 days has elapsed from the  
(Continued)



granting the Applicant's motion, subject to a condition. If any party objects to this condition, it may file a petition for reconsideration within 10 days of the date of service of this Memorandum and Order.

1. This proceeding involves DPC's application to convert its provisional operating license for the LaCrosse Boiling Water Reactor (LACBWR) to a full-term operating license. Although DPC's provisional license (No. DPR-45) expired in February 1975 under its own terms, it has remained in effect during the pendency of this proceeding by virtue of 10 C.F.R. § 2.109 and DPC's timely application for a full-term license. In 1982, this Board issued a Partial Initial Decision on environmental contentions and other questions. LBP-82-58, 16 NRC 512 (1982), *aff'd, sua sponte*, ALAB-733, 18 NRC 9 (1983). The safety questions raised by the application (except for those encompassed by a show-cause order or by an expansion of the facility's spent fuel pool storage capacity, on which we issued other decisions<sup>2</sup>) had been deferred pending the Staff's preparation of a Safety Evaluation Report.

On April 29, 1987, prior to the Staff's completion of that report, DPC advised the Commission of its intent to permanently shut down and decommission LACBWR. DPC advises us that LACBWR was shut down on April 30, 1987, and that final defueling of the reactor was completed by June 11, 1987. In response to an amendment request by DPC, dated May 22, 1987, the NRC Staff on August 4, 1987, issued Amendment No. 56 to the LACBWR provisional operating license, deleting the authority to operate the reactor and converting the license to a "possession-only" license.<sup>3</sup>

We are further advised that on December 21, 1987, DPC submitted its proposed decommissioning plan to the NRC<sup>4</sup> and that, on February 10, 1988, DPC amended the application that is currently before us to delete the request to convert the license to a full-term operating license and to amend the license to authorize DPC to continue to maintain LACBWR in a possession-only status during the safe storage and decontamination periods specified in the decommissioning plan. (Neither the plan nor the amended application referenced in this paragraph has been provided to this Board.)

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date of that telephone request. After several attempts, the Chairman of this Board contacted the Intervenor's representative by telephone on May 12, 1988, to ascertain CREC's interest (if any) in the termination motion. CREC's representative advised that he had received the motion but had not responded because of the lack of time and resources for further litigation. He mentioned two potential issues that he believed should be litigated. See note 7, *infra*.

<sup>2</sup>LBP-80-2, 11 NRC 44 (1980), *aff'd, sua sponte*, ALAB-617, 12 NRC 430 (1980), *in part vacated as moot*, ALAB-638, 13 NRC 374 (1981); LBP-81-7, 13 NRC 257 (1981), LBP-83-23, 17 NRC 655 (1983), both *aff'd sua sponte*, ALAB-733, *supra*.

<sup>3</sup>52 Fed. Reg. 32,215 (Aug. 26, 1987). The Staff made the "no significant hazards" finding of 10 C.F.R. § 50.91 in conjunction with its approval of the license amendment. The proposed finding was noticed in the *Federal Register* (52 Fed. Reg. 24,542, 24,546 (July 1, 1987)) and no one objected to, or provided comments on, that finding. The Staff provided us a copy of Amendment 56 on August 6, 1987.

<sup>4</sup>A Notice of Opportunity for Hearing on the plan was published on April 8, 1988 (53 Fed. Reg. 11,718).

1. DPC's motion has not been opposed by any party. Accordingly, on procedural grounds, we could grant it. 10 C.F.R. § 2.707. However, that action, without more, would leave DPC without a currently effective license. Its provisional license, which was modified by Amendment 56, has expired by its own terms and only remains in effect through the pendency of this proceeding. Amendment 56 changed the authority granted by the license but did not modify its expiration date or its status as a provisional license. To permit a continuation of licensed storage of spent fuel in the reactor storage pool, as apparently intended by DPC, we would have to authorize a full-term operating license with operating authority limited as under Amendment 56.<sup>5</sup>

2. In considering a full-term license, our authority with respect to safety issues is limited to resolving those matters put into controversy by a party, unless we should determine that a serious safety matter exists. 10 C.F.R. § 2.760a. We have examined the remaining proposed safety contentions previously submitted by CREC (Nos. 3, 10, 13-17, and 25-27). CREC has not attempted to pursue any of these contentions in the context of the proposed onsite storage of spent fuel to be carried out by DPC under the "possession only" license. Moreover, we are unable to determine whether, or to what extent, CREC intends these generally worded contentions to be applicable to activities under the "possession only" license. Given CREC's lack of further interest in pursuing these contentions, and perceiving no "serious safety matter" as contemplated by § 2.760a, we are dismissing these contentions.<sup>6</sup> Beyond that, no other safety matters regarding the proposed termination or the proposed full-term "possession only" license have been raised by a party, nor are we aware of any safety matters that would warrant our attention at this time.<sup>7</sup>

3. With regard to environmental matters, our jurisdiction is similarly defined. 10 C.F.R. § 2.760a. In LBP-82-58, *supra*, we ruled on the environmental questions at issue in this proceeding. Although no environmental issues bearing

<sup>5</sup> We express no opinion with respect to whether the application for decommissioning authority would constitute an "application for a renewal or for a new license for the activity" authorized by the provisional license, sufficient to keep the provisional license in effect pursuant to 10 C.F.R. § 2.109. That question becomes moot as a result of the order we are now issuing. In particular, however, we note that the decommissioning activities would continue beyond the period for which a full-term license could have been issued, and that permission for decommissioning was not sought prior to the technical expiration date of Provisional License DPR-45. Both of these considerations raise doubt as to whether § 2.109 could be used to extend the provisional license pending consideration by NRC of a decommissioning plan.

<sup>6</sup> In dismissing these contentions, we express no opinion on their litigability in conjunction with the "possession only" license, or on their merits (except to the extent we are determining that they do not warrant consideration pursuant to § 2.760a).

<sup>7</sup> During the May 12, 1988 telephone communication between the Board Chairman and CREC's representative (see note 1, *supra*), the representative mentioned two issues that he believed warranted consideration. The first involved leakage in the spent fuel pool and alleged unsuccessful attempts by the Applicant to repair such leaks. We expect that the Staff will investigate such leakage to ascertain any safety implications. The other issue concerned potential storage of spent fuel from other reactors in the LACBWR pool — a situation that could not occur without a further license amendment and Notice of Opportunity for Hearing. Cf. LBP-80-2, *supra*, 11 NRC at 53-55.

on termination or a full-term "possession only" license have been raised by a party, one matter has come to our attention which may need resolution: the potential requirement that the Staff prepare an environmental review document for the proposed termination and/or proposed full-term "possession only" license.

The environmental review documents are of two types: an environmental impact statement (EIS) for actions set forth in 10 C.F.R. § 51.20, and an environmental assessment (EA) for actions set forth in 10 C.F.R. § 51.21. EAs must be prepared for all actions other than those for which an EIS is required or which are categorically excluded by 10 C.F.R. § 51.22.

The decommissioning of LACBWR will require the preparation of an EIS, 10 C.F.R. § 51.20(b)(5). DPC's proposed decommissioning plan, although submitted to NRC, is not currently before us for review. The action giving rise to the request for termination is DPC's withdrawal of its application for a full-term operating license and the conversion of its provisional operating license to a full-term "possession only" license. The *Federal Register* notice accompanying Amendment 56 reflects that the Staff prepared a safety evaluation report but not an environmental review document in connection with that amendment. 52 Fed. Reg. 32,215 (1987). The license amendment itself, however, recites that the provisions of 10 C.F.R. Part 51 have been satisfied. We presume (although we have not been formally advised) that the Staff regarded the amendment as an "amendment . . . which changes a requirement with respect to installation or use of a facility component" within the meaning of 10 C.F.R. § 51.22(c)(9) and hence subject to a categorical exclusion.

Upon granting the Applicant's motion, DPC's application for a full-term operating license will have been "finally determined" and DPC's provisional license will expire. 10 C.F.R. § 2.109. DPC's "new" possession-only license, the major purpose of which is to authorize DPC to possess spent fuel, would normally require the preparation by the Staff of at least an EA. Under the terms of 10 C.F.R. § 51.23, however, the Commission has made a generic determination that the storage of spent fuel "for at least 30 years beyond the expiration of reactor operating licenses" will result in no significant environmental impact and, accordingly, no environmental review need be taken of the storage of spent fuel in reactor storage pools after the cessation of reactor operation.

The authorized exemption from environmental review of the storage of spent fuel in reactor storage pools following the termination of reactor operation does not appear to be indefinite or to extend for an unlimited period of time. Given the finding in 10 C.F.R. § 51.23, we believe it is limited to onsite storage of no more than 30 years. We assume that DPC's decommissioning plan will be acted upon by NRC in less than 30 years. (The Notice of Opportunity for Hearing has already been published.) As indicated earlier, such action by NRC will require preparation of an EIS. Nonetheless, to comply with the requirements of the National Environmental Policy Act, as implemented through



NRC's regulations in 10 C.F.R. Part 51, we believe that (pending final approval of decommissioning) a technical limit to the period of onsite spent fuel storage should be imposed on the "possession only" license. That limit, from the standpoint of the environmental review, could be as long as 30 years but is subject to the termination date of the full-term license heretofore sought by DPC.

Our approval of DPC's motion (which amounts to the withdrawal of the license application that is before us) may be "on such terms" as we may prescribe. 10 C.F.R. § 2.107(a). We will grant DPC's motion, as long as the "possession only" license that remains is converted to a full-term license and limited to a period ending either with the approval by NRC of a decommissioning plan and grant of decommissioning authority for LACBWR or the term of the full-term license previously sought by DPC, whichever comes earlier. The full-term license previously sought by DPC extends until March 29, 2003 — i.e., 40 years from the date of issuance of the construction authorization, and less than 30 years from the date of this Memorandum and Order. 10 C.F.R. § 50.51; 43 Fed. Reg. 15,021 (Apr. 10, 1978); LBP-82-58, *supra*, 16 NRC at 515. Because none of the parties has addressed this termination condition, we will permit parties, if they wish to eliminate or modify the license condition we are imposing, to file a petition for reconsideration within 10 days of service of this Order (*cf.* 10 C.F.R. § 2.771).

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For the reasons stated, it is, this 13th day of May 1988, ORDERED:

1. CREC's remaining safety contentions in this proceeding (Nos. 3, 10, 13-17, and 25-27) are *dismissed*.
2. DPC's motion to terminate this proceeding is *granted*, and DPC is granted permission to *withdraw* its application for full-term operating authority, subject to the condition set forth below.
3. This termination is *conditioned* upon the grant by the Director, Office of Nuclear Reactor Regulation, which grant is hereby *authorized*, of an amendment to Provisional Operating License DPR-45, as amended, to convert the license for LACBWR to a full-term operating license containing terms and conditions similar to those governing license DPR-45, in particular those provided under Amendment 56 which limit the license to a "possession only" license. DPC's "possession only" license for LACBWR is to expire on March 29, 2003, or upon final approval by NRC of a decommissioning plan and grant of decommissioning authority for LACBWR, whichever comes earlier.
4. A petition for reconsideration of the above termination condition may be filed within 10 days of service of this Memorandum and Order.
5. In accordance with 10 C.F.R. §§ 2.760, 2.762, 2.764, 2.785, and 2.786, this Memorandum and Order becomes effective upon expiration of the period



within which petitions for reconsideration may be filed. If a petition is filed, the effectiveness of this Memorandum and Order is suspended pending resolution of the petition for reconsideration. This Memorandum and Order will constitute the final decision of the Nuclear Regulatory Commission thirty (30) days following its effective date, subject to any review pursuant to the above-cited Rules of Practice.

6. Any party may take an appeal from this Memorandum and Order by filing a Notice of Appeal within ten (10) days after the effective date specified above. Each appellant must file a brief supporting its position on appeal within thirty (30) days after filing its Notice of Appeal (forty (40) days if the Staff is the appellant). Within thirty (30) days after the period has expired for the filing and service of the briefs of all appellants (forty (40) days in the case of the Staff), a party who is not an appellant may file a brief in support of, or in opposition to, any such appeal(s). *See* 10 C.F.R. § 2.762.

THE ATOMIC SAFETY AND  
LICENSING BOARD

Charles Bechhoefer  
ADMINISTRATIVE JUDGE

Dr. George C. Anderson  
ADMINISTRATIVE JUDGE

Frederick J. Shon  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 13th day of May 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before Administrative Judge:

Charles Bechhoefer

In the Matter of

Docket No. 55-60755  
(ASLBP No. 87-551-02-SP)

ALFRED J. MORABITO  
(Senior Operator License for  
Beaver Valley Power Station, Unit 1)

May 18, 1988

The Presiding Officer clarifies his Decision of April 20, 1988, LBP-88-10, 27 NRC 417, to indicate that his "direction" to the Staff to issue a license did not preclude the Staff from making findings and determinations on certain matters that were not in controversy in the proceeding.

**MEMORANDUM AND ORDER**  
(Staff Motion for Clarification)

This proceeding involves the application by Mr. Alfred J. Morabito for a Senior Reactor Operator (SRO) license for the Beaver Valley Power Station, Unit 1. The NRC Staff had denied the license because of Mr. Morabito's failure to pass both the written and simulator examinations that had been administered to him. In a Decision dated April 20, 1988 (and served one day later, on April 21, 1988), LBP-88-10, 27 NRC 417, I determined that Mr. Morabito had passed both the written and simulator examinations and, accordingly, "directed" that he be issued an SRO license, subject to the standard terms and conditions that govern such licenses.

On May 4, 1988, the NRC Staff filed a motion for clarification of one aspect of that Decision. On May 11, 1988, Mr. Morabito filed his response.

Specifically, the Staff seeks clarification of my direction to the Director, Office of Nuclear Reactor Regulation (NRR), or, as appropriate, the Regional Administrator, Region I, to issue an SRO license to Mr. Morabito. The Staff acknowledges that the Decision is dispositive of all issues in controversy before me (subject to Commission review on its own motion). It points out, however, that there are other issues and requirements in 10 C.F.R. Part 55 that were not in controversy before me and that the Director, NRR, or, as appropriate, the Regional Administrator, Region I, must make the necessary findings on issues not in controversy. The Staff seeks clarification on whether my "direction" could be read as precluding the appropriate official from making those findings.

For his part, Mr. Morabito suggests that an SRO license should be issued to him consistent with the date of the licenses for other candidates who were examined at the same time. He states that, insofar as he was aware, all requirements of 10 C.F.R. Part 55 were satisfied at the time the license examination was administered. He indicates that, if a problem were to arise with respect to matters not related to the examination, the Staff could follow well-established procedures for cancelling the license.

The Staff is correct in reading my Decision as not precluding the appropriate official from making the requisite findings on issues not related to the examination, such as are required under 10 C.F.R. §§ 55.11(a) and (c) (1987). My Decision holds only that Mr. Morabito has fulfilled the examination requirement for an SRO license, set forth in 10 C.F.R. § 55.11(b) (1987). As Mr. Morabito suggests, the record before me demonstrated that, prior to taking his examination, the other requirements would have to be, and had been, satisfied; and, accordingly, after passing the examination, he was entitled to a license. *See, e.g.,* 10 C.F.R. § 55.10(a)(5)-(7) (1987); Decision, LBP-88-10, 27 NRC at 447; *id.*, Conclusion of Law No. 3, 27 NRC at 450. My "direction" related only to the requirement in § 55.11(b) that an applicant pass a prescribed written examination and operating test or simulated operating test. In other words, it was intended to preclude the Staff from any further regrading of the examination, whether or not particular answers may have been contested. But it was not intended to limit the Staff's appropriate exercise of its authority under sections unrelated to the examination requirement, which (to repeat) was the only matter under consideration in this proceeding.

Almost 2 years have elapsed since Mr. Morabito took his examination. Various factors bearing upon Mr. Morabito's license eligibility, unrelated to the examination, may have changed. Moreover, the term of the SRO license which I directed to be issued ran from the date of issuance, not from the date of the licenses for others who were examined at the same time. LBP-88-10, *supra*, 27 NRC at 447 n.142. Contrary to Mr. Morabito's suggestion in his

response to the Staff's motion, my "direction" was not intended to preclude the Staff, before issuing an SRO license, from taking into account information on these other matters which may have developed during the period during which Mr. Morabito's appeal was under consideration, to assure itself that all license requirements as of the date of license issuance have been satisfied. If the Staff determines that matters unrelated to the examination would preclude its issuance of an SRO license, it should, of course, provide Mr. Morabito with a reasonable time to satisfy these other requirements, were he to seek to do so.

To preclude any misconceptions caused by the wording of my Decision, and subject to the understandings set forth above, I am hereby modifying the word "*directed*" at 27 NRC at 450 to read "*directed, subject to the satisfaction by Mr. Morabito of requirements set forth in 10 C.F.R. §§ 55.11(a) and (c) (1987).*"

IT IS SO ORDERED.

PRESIDING OFFICER

Charles Bechhoefer  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 18th day of May 1988.



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before Administrative Judges:

Robert M. Lazo, Chairman  
Glenn O. Bright  
Richard F. Cole

In the Matter of

Docket Nos. 30-13435-SC-1  
30-13435-SC-2  
(ASLBP Nos. 88-559-01-SC  
88-572-02-SC)

FINLAY TESTING LABORATORIES,  
INC.

May 23, 1988

The Licensing Board approves a Settlement Agreement entered into by both parties and terminates the proceeding. Based upon its review, the Board is satisfied that approval of the Settlement Agreement and termination of the proceeding based thereon is in the public interest.

**ORDER APPROVING SETTLEMENT AGREEMENT  
AND TERMINATING PROCEEDING**

On May 13, 1988, the parties to this enforcement proceeding, the NRC Staff and Finlay Testing Laboratories, Inc. (Licensee), filed with the Atomic Safety and Licensing Board (1) a Settlement Agreement that had been accepted by both parties and was in the process of being signed and (2) a joint motion requesting the Board's approval of the Agreement and the entry of an order terminating this proceeding, with a proposed Order. A fully executed copy of the Settlement Agreement was received by the Licensing Board on May 20, 1988. The Board

has reviewed the Agreement under 10 C.F.R. § 2.203 to determine whether approval of the Agreement and consequent termination of this proceeding is in the public interest. Based upon its review, the Board is satisfied that approval of the Settlement Agreement and termination of this proceeding based thereon is in the public interest.

\* Accordingly, the Board approves the Settlement Agreement attached hereto and incorporated by reference into this Order. Pursuant to §§ 81, 161(b), 161(c), 161(i) and 161(o) of the Atomic Energy Act of 1954, as amended (42 U.S.C. §§ 2111 and 2201(b), (c), (i) and (o)) and 10 C.F.R. § 2.203, the Board hereby terminates this proceeding on the basis of the Settlement Agreement.

THE ATOMIC SAFETY AND  
LICENSING BOARD

Robert M. Lazo, Chairman  
ADMINISTRATIVE JUDGE

Glenn O. Bright  
ADMINISTRATIVE JUDGE

Richard F. Cole  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,  
this 23d day of May 1988.

SETTLEMENT AGREEMENT

On September 21, 1987, the Nuclear Regulatory Commission (NRC) Staff issued an Order, effective immediately, that suspended the byproduct material license of Finlay Testing Laboratories, Inc. (the Licensee) pending further investigation of the Licensee. The Licensee requested a hearing on that suspension and the matter was referred to this Atomic Safety and Licensing Board. The further investigation was conducted and, as a result of that investigation, on April 11, 1988, the Staff issued an Order Continuing Suspension of License (Effective Immediately) and Order to Show Cause Why the License Should Not Be Revoked (Revocation Order). Licensee responded with a request for hearing on the Revocation Order. The NRC Staff and Gordon W. Finlay, individually and as owner and president of the Licensee, hereby agree as follows:

1. In response to the Revocation Order, the Licensee withdraws its request for a hearing dated May 2, 1988, and agrees to a termination of License No. 53-17854-01. Termination of this license is subject to compliance with 10 C.F.R. 30.36(d). Licensee agrees to submit all information required by section 30.36(d) and to transfer all licensed material to an authorized recipient within 30 days of this agreement. All other activities under License No. 53-17854-01 shall remain suspended until the license has been terminated.
2. The Licensee and Gordon W. Finlay deny the findings made in the Revocation Order and accompanying Notice of Violation, not otherwise admitted in the answers of October 5, 1987, and May 2, 1988. However, both the Licensee and Gordon W. Finlay agree not to deny the findings in the Revocation Order and Notice of Violation should the findings be used in considering any future application by the Licensee or Gordon W. Finlay for an NRC or Agreement State materials license or in any other NRC or Agreement State materials licensing or civil enforcement proceeding which may be brought in the future in which the Licensee or Gordon W. Finlay may be adversely affected. These findings may be accepted as evidence in any such future proceeding, provided however, that the Licensee or Gordon W. Finlay shall not be precluded from offering evidence of explanation, mitigation or changed circumstances.
3. For a period of three years from September 21, 1987 (until September 20, 1990) the Licensee agrees not to apply to the NRC or to any Agreement State for a new license under the present or any assumed corporate name and Gordon W. Finlay agrees not to apply for such a license on his own behalf or on behalf of any entity which he owns or controls during that same period.
4. For a period of 3 years from September 21, 1987 (until September 20, 1990), Gordon W. Finlay agrees that he will not perform the duties of a radiographer or a supervisor of radiographers. For that same period he further agrees that he will provide prior written notice to the NRC or any Agreement State with applicable regulatory authority before performing any other duties related to licensed activity, for example, serving as a controlling officer of a licensee or as an assistant radiographer. The notice is to be provided in writing to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 or the applicable Agreement State, 10 working days prior to commencement of the activity.
5. The Licensee and Gordon W. Finlay agree to notice dismissal with prejudice of the action pending in the United States District Court for

the District of Hawaii, *Finlay Testing Laboratories, Inc. vs. U.S. Nuclear Regulatory Commission, et al.*, Civil No. 88-00276 VAC.

6. The NRC Staff agrees that it will not seek civil penalties against the Licensee or Gordon W. Finlay for violations asserted in the Notice of Violation accompanying the Revocation Order.
7. The NRC Staff and the Licensee shall jointly move the Atomic Safety and Licensing Board for an Order approving this settlement agreement and terminating this proceeding. This agreement shall become effective upon the Board approval.

FOR THE NUCLEAR  
REGULATORY COMMISSION

Stephen H. Lewis, Esq.  
Senior Supervisory Trial  
Attorney  
Dated this 13th day of May 1988

FOR GORDON W. FINLAY  
AND FINLAY TESTING  
LABORATORIES, INC.:

Barry D. Edwards, Esq.  
Dated this 16th day of May 1988



Directors'  
Decisions  
Under  
10 CFR 2.206

**DIRECTORS' DECISIONS**

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Thomas E. Murley, Director

In the Matter of

Docket No. 50-482

KANSAS GAS AND ELECTRIC  
COMPANY, *et al.*

(Wolf Creek Generating Station,  
Unit 1)

May 26, 1988

The Director of the Office of Nuclear Reactor Regulation denies a petition filed by Ms. Stevi Stephens and Mr. Robert V. Eye, on behalf of the Nuclear Awareness Network, concerning members of the public trespassing on the Wolf Creek Generating Station (Wolf Creek) restricted areas to fish in the Wolf Creek cooling lake.

**RADIOLOGICAL EFFECT OF TRESPASSING AT A NUCLEAR SITE**

In response to a petitioner's claim that trespassing onto a nuclear site raises serious public health questions, the Director of NRR finds that no such health hazard existed since the trespassing had occurred at portions of the owner-controlled area of the site outside the restricted area and the radiological releases of the reactor had not exceeded the limits specified in 10 C.F.R. § 20.106.

**RADIOLOGICAL EFFECT OF EATING FISH FROM A NUCLEAR REACTOR'S COOLING LAKE**

In response to a petitioner's allegation that eating fish caught in a nuclear reactor's cooling lake may be a health hazard, the Director of NRR finds that no hazard existed based on the plant's technical specifications limiting radioactive releases into the lake and the acceptably low level of radioactivity in the fish sampled at the lake.

## **BREACHES IN A PLANT'S PHYSICAL SECURITY**

In response to a petitioner's allegation that trespassing incidents at a nuclear site may be indicative of a serious security breakdown, in violation of 10 C.F.R. Part 73, the Director of NRR finds that the only locations at a reactor site where licensees are required to exclude unauthorized individuals are protected areas, material access area, and vital areas. No trespassing in these areas had occurred at this nuclear site.

## **EXCLUSION AND RESTRICTED AREAS**

The presence of individuals in exclusion or restricted areas would not normally violate the Commission's regulations except if such individuals were in those portions of those areas containing the protected area, the material access area, and the vital area. There is no violation of 10 C.F.R. § 20.3(14) or 10 C.F.R. § 100.3(a) if individuals are in other portions of the exclusion or restricted area so long as the licensee has full authority for removing these individuals if an emergency occurs.

## **EMERGENCY PREPAREDNESS**

There was no violation of 10 C.F.R. § 50.47 and Appendix E to 10 C.F.R. Part 50 when only a very small number of trespassers (six in 5 years) had entered the owner-controlled area of a nuclear site which was posted as private property and which had no recreational or public use within its boundaries. However, because unauthorized persons may, albeit infrequently, trespass into this area, the Staff requested that the Licensees provide assurance that in the future such unauthorized persons are warned or advised of protective actions in accordance with NUREG-0654 § II.J, "Protective Response."

## **DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206**

### **I. INTRODUCTION**

By petition dated November 12, 1987, and submitted to the Commission pursuant to 10 C.F.R. § 2.206, Ms. Stevi Stephens and Mr. Robert V. Eye, on behalf of the Nuclear Awareness Network (NAN), allege that members of the public are trespassing on the Wolf Creek Generating Station (Wolf Creek) restricted areas to fish in the Wolf Creek cooling lake. NAN claims that these trespassers may be exposed to undue radiation during normal operation of the

facility and that Wolf Creek emergency plans may not be adequate to ensure that trespassers are notified and evacuated during a radiological emergency. It further claims that this trespassing represents a security breakdown that could be exploited by terrorists and, when included with several other past security problems that have occurred at the site, is symptomatic of an overall security breakdown at Wolf Creek.

NAN requests that the NRC investigate whether this trespassing violates any NRC regulations or conditions of its license, and, if so, that appropriate enforcement and corrective actions be taken. It specifically suggests that there may be violations of 10 C.F.R. § 20.3(14), 10 C.F.R. § 50.47, 10 C.F.R. Part 50, Appendix E, 10 C.F.R. Part 73, 10 C.F.R. § 100.3(a), and Wolf Creek Technical Specifications 5.1.1 and 5.1.3 and Figure 5.1-1.

By letter dated December 16, 1987, I acknowledged receipt of this petition and informed NAN that appropriate action would be taken within a reasonable time. A discussion of the issues involved and my decision in these matters follows.

## II. DISCUSSION

The results of the NRC Staff's investigation of each of NAN's requests and the determination of compliance with the applicable regulations is provided below.

### A. Trespassing on the Wolf Creek Site

The Wolf Creek site consists of 9818 acres of owner-controlled property, which contains the 5090-acre cooling lake. The plant's owners include Kansas Gas and Electric Company, Kansas City Power and Light Company, and Kansas Electric Power Cooperative, Inc. (Licensees). The plant is located on a point of land that extends into the cooling lake and is surrounded by the lake on three sides. In accordance with 10 C.F.R. § 20.3(a)(14), the Licensees have designated a 1200-meter-radius circle around the containment as the restricted area for the purpose of protecting individuals from radiation and radioactive materials. The restricted area is located entirely within the owner-controlled area and contains 1118 acres. Approximately 50% of the restricted area consists of a portion of the cooling lake. The only access to the restricted area is via the plant access road.

NAN contends that individuals are penetrating the Wolf Creek site boundary and are routinely eating fish that are caught in the cooling lake. Wolf Creek security personnel periodically inspect the lake area after work hours. The Licensees report that there have been six known incidents of trespassing on



the Wolf Creek site over a period of approximately 5 years. Three of these incidents involved fishermen, two involved hunters, and one involved persons in an automobile that became stuck after straying off the paved road surface. None of these trespassers were inside the restricted area of the Wolf Creek site.

Licensees' statement is consistent with the experience of NRC personnel. Although trespassing on site property is not an event that requires a report to the NRC unless there is a threat to safety, the NRC resident inspector assigned to the site states that he is aware of only two or three occasions of trespassing during the 3 years that he has been assigned to the site.

On the basis of the small number of trespassing events detected by Wolf Creek security personnel, it does not appear that trespassing on the Wolf Creek cooling lake is a frequent occurrence.

#### **B. Radiological Effect of Trespassing on the Wolf Creek Site**

NAN further claims that failure to exclude people from restricted areas where radiation can occur raises serious public health questions. However, the Technical Specifications for the Wolf Creek Generating Station include limiting conditions for operation to control the release of liquid and gaseous radioactive effluents. Experience with the design, construction, and operation of nuclear power reactors indicates that compliance with these conditions will keep average annual releases of radioactive materials in effluents at small percentages of the limits specified in 10 C.F.R. § 20.106.

The limiting conditions for operation, which are part of the Wolf Creek operating license, limit the annual dose from liquid and gaseous effluents from the facility that members of the public can receive in unrestricted areas to less than the following:

For liquid effluents	3 millirem to the whole body 10 millirem to any organ
For gaseous effluents as noble gases	10 millirads for gamma radiation 20 millirads for beta radiation
For gaseous effluents as iodine-131 and -133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days	15 millirem to any organ

These dose limits, which are a small fraction of the maximum permissible dose of 500 millirem per year for members of the public in unrestricted areas, specified in 10 C.F.R. Part 20, are conservatively established using the measured quantities of radioactive effluents actually released. The calculations assume that

the person exposed is located at the 1200-meter restricted area boundary for the entire year and drinks water and eats fish from the cooling lake.

Because of the conservative nature of these limiting conditions for operation, the NRC Staff concludes that there would be no health hazard to trespassers entering any portions of the Wolf Creek owner-controlled area outside the restricted area during normal plant operation. The Staff is not aware of any instances where trespassers have been present inside the restricted area or have been present on other portions of the site frequently or for extended periods.

#### C. Radiological Effect of Eating Fish from the Wolf Creek Cooling Pond

NAN suggests that exposure to radiation caused by eating fish from the Wolf Creek cooling lake could potentially be seriously damaging to the public health. There is no valid basis for this claim. The Wolf Creek Technical Specifications limit the amount of radioactive materials that can be deposited into the lake. They also require that the Licensees carry out a sampling program that determines the amount of radioactive material present in various environmental samples collected in the vicinity of the plant. Among the samples collected and analyzed are fish from the cooling lake.

The results of the most recently submitted testing reveal that only naturally occurring potassium-40 (K-40) activity in all fish samples taken from the Wolf Creek cooling lake. No other radionuclides were detected in the samples. Similar naturally occurring K-40 activity has recently been observed in the control samples taken from the nearby John Redmond Reservoir and is believed to be present in all biological samples taken worldwide.

On the basis of the Technical Specifications that limit the release of liquid effluents into the Wolf Creek cooling lake and the acceptably low level of radioactivity in the fish sampled at this lake, the NRC Staff concludes that eating fish caught from there will not result in a hazard to the public health.

#### D. Compliance with 10 C.F.R. Part 73

NAN also suggest that the trespassing incidents at Wolf Creek may be in violation of Part 73 of the NRC's regulations and that they are indicative of a serious security breakdown at the facility which potentially could be exploited by terrorists. In support of this claim, NAN refers to an NRC report entitled "Trends and Patterns Analysis of the Operational Experience of Newly Licensed United States Nuclear Power Reactors," August 1986, AEOD/P604, which states that Wolf Creek had experienced a higher-than-average number of security

violations. NAN also refers to NRC Information Notice 87-27 which discusses potential attacks by terrorists.

Contrary to these concerns, the physical plant security at Wolf Creek is satisfactory. Facility Operating License NPF-42 for Wolf Creek requires that the Licensees fully implement and maintain the Wolf Creek Physical Security Plan and the Security Training and Qualification Plan.<sup>1</sup> The NRC Staff has reviewed these plans and has concluded that the protection provided against radiological sabotage meets the requirements of Part 73. In addition, as part of Staff's function to periodically evaluate the effectiveness of physical security plans, Staff has evaluated Wolf Creek security program three times since 1984 in its Systematic Assessment of Licensee Performance (SALP). For each of these assessments, Licensees' security program was rated as Category 2, signifying that NRC attention for this program only needs to be maintained at normal levels.<sup>2</sup>

The violations that NAN refers to in the referenced August 1986 NRC report are not of present concern at the facility. The report refers to four violations that occurred almost 3 years ago during the 6-month period from September 1985 through January 1986, following the issuance of the Wolf Creek operating license. Three of these violations were rated Severity Level III<sup>3</sup> (on a scale of I to V where I is the most significant) and one was rated Severity Level II. The Severity Level II violation was considered to be a breakdown in physical security and resulted in the imposition of a \$40,000 civil penalty. The Licensees were required to inform the Staff of the actions that they had taken to correct these violations and prevent their recurrence. The Staff reviewed these corrective actions and found that they were responsive to the concerns raised in the notices of violation. Because these violations occurred several years ago and have been fully corrected, we conclude that they do not lend support to NAN regarding its trespassing contention.

Regarding NRC Information Notice 87-27, this notice was a generic communication regarding potential threats reported in the media which was sent by

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<sup>1</sup>The details of these plans are protected against public disclosure under the provisions of 10 C.F.R. § 73.21; however, a summary of the Staff's review and acceptance of the plans is provided in § 13 of Supplement No. 5 to NUREG-0881, "Safety Evaluation Report Related to the Operation of Wolf Creek Generating Station, Unit No. 1."

<sup>2</sup>When a licensee qualifies for Category 2, the NRC has concluded that licensee management attention and involvement are evident and that management is concerned with nuclear safety. For this category, the NRC has also determined that licensee resources are adequate and reasonably effective so that satisfactory operational safety is being achieved.

<sup>3</sup>The details of these violations are protected from public disclosure under the provisions of 10 C.F.R. § 73.21. However, for a general description of the Severity Level III violations, see items 8517-01, 8527-01, and 8527-02 of NRC Inspection Reports 85-34 and 86-12 for the Wolf Creek facility, dated March 6, 1976, and July 21, 1986, respectively. For the Severity Level II violation, see item 8544-01 of NRC Inspection Report 87-34 for the Wolf Creek facility, dated December 29, 1987. (The Severity Level II violation is also referred to in NUREG-0090, "Report to Congress on Abnormal Occurrences July-September 1986," Vol. 9, No. 3.)

the NRC to all nuclear power plants. The notice was merely a part of Staff's ongoing program of ensuring that licensees are made aware of such issues, and the threats in question cannot be considered as a specific threat to Wolf Creek alone.

NAN's theory that the trespassing incidents represent a security breakdown that could be exploited by terrorists is similarly unfounded. Under NRC regulations, the only locations at a reactor facility where licensees are required to exclude unauthorized individuals are protected areas, material access areas, and vital areas. Such areas are equipped with barriers and physical security to prevent access. See 10 C.F.R. §§ 73.2, 73.20, and 73.45. The Wolf Creek cooling lake is not part of any of these areas.

On the basis of Staff's evaluation of NAN's concerns, no violation of Part 73 has been identified and no enforcement or corrective actions are required.

**E. Compliance with 10 C.F.R. § 20.3(14), 10 C.F.R. Part 100, and Technical Specifications 5.1.1 and 5.1.3**

NAN contends that penetration of the Wolf Creek site boundary by trespassers fishing in the cooling lake may indicate the inability of the Licensees to control activities within the Wolf Creek exclusion and restricted areas as required by §§ 20.3(14) and 100.3(a) of the Commission's Regulations and by §§ 5.1.1 and 5.1.3 of Licensees' Technical Specifications. It also requests that the NRC investigate whether the integrity of the Wolf Creek exclusion and restricted areas is being maintained.

To evaluate NAN's concerns, an understanding of the regulations and technical specifications in question is necessary. Restricted areas are defined by 10 C.F.R. § 20.3(14) as areas that must be controlled by licensees for purposes of protecting individuals from exposure to radiation and radioactive materials. A restricted area cannot include any areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area. Exclusion areas are defined by 10 C.F.R. § 100.3(a) as areas where licensees have the authority to determine all activities including exclusion or removal of personnel or property. Residence within exclusion areas is not always prohibited, but residents are subject to ready removal in the case of necessity. The exclusion area and restricted area for Wolf Creek (both areas are the same for this facility) are set out in §§ 5.1.1 and 5.1.3 of the Licensees' Technical Specifications as a 1200-meter-radius circle centered around the Unit 1 containment. The exclusion/restricted area for the facility is only a small portion of the Wolf Creek owner-controlled site which encompasses 9818 acres.

As can be seen by the definitions of these terms, the presence of individuals (whether authorized or not) in an exclusion or restricted area would not normally violate either § 20.3(14) or § 100.3(a) since these regulations are not concerned



with excluding individuals from these areas during safe operations. As noted above, the only locations at a reactor facility where Licensees are required to exclude unauthorized individuals are protected areas, material access areas, and vital areas. Although these protected areas are normally located within the exclusion and restricted areas, there is no indication in this case that they were penetrated by trespassers.

There is no violation of either § 20.3(14) or § 100.3(a) at Wolf Creek since the Licensees have owned and controlled all portions of the exclusion/restricted area and have had full authority for removing all individuals from this area if an emergency had occurred. Moreover, in this case no information has been offered by NAN that persons fishing at the cooling lake have ever trespassed into the 1200-meter Wolf Creek exclusion/restricted area.

On the basis of the above, the Staff concludes that the Licensees are in compliance with § 20.3(14) and § 100.3(a) and are operating the facility in accordance with Technical Specifications 5.1.1 and 5.1.3. Accordingly, the NRC Staff has determined that the Licensees are able to maintain the integrity of the exclusion-restricted area at Wolf Creek and that no enforcement or corrective actions are required.

#### **F. Compliance with 10 C.F.R. § 50.47 and Appendix E to 10 C.F.R. Part 50**

NAN suggests that trespassers who are fishing at the Wolf Creek cooling lake may be endangered during a radiological emergency at the site and requests that the NRC determine whether the Licensees' emergency plans are adequate to notify and evacuate such individuals if such an exigency occurs.

The NRC Staff has reviewed the Licensees' emergency plan to determine if adequate provisions exist to notify and evacuate persons within the Wolf Creek site, including potential trespassers who might be fishing at the cooling lake. The Staff has concluded that the plan is sufficient for persons within the exclusion/restricted area of the site, but it does not include provisions to notify and evacuate people in the remainder of the owner-controlled Wolf Creek site. This remaining portion of the site, which is posted as private property, has no recreational or public use areas within its boundaries.

Sections 50.47 and Appendix E to Part 50 set forth the Commission's regulations for emergency preparedness. The NRC Staff uses the guidance in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," to determine the adequacy of emergency plans at nuclear power plants. Evaluation Criterion J.1.d of NUREG-0654 states: "Each licensee shall establish the means and time required to warn or advise onsite individuals and individuals who may be in areas controlled by the operator including . . . (d)

other persons who may be in the public access areas or passing through the site or within the owner-controlled area."

On the basis of its review of the Wolf Creek Emergency Plan, and taking into consideration that the owner-controlled area is posted as "private property — no trespassing" and the known incidents of trespassing are few (six in 5 years), the NRC Staff continues to find that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. However, because unauthorized persons may, albeit infrequently, trespass onto owner-controlled property at the Wolf Creek site, the Staff will request the Licensees to address this issue, and will obtain assurance from them that unauthorized persons are warned or advised of protective actions in accordance with NUREG-0654 § II.J, "Protective Response."

### III. CONCLUSION

The NRC Staff has reviewed the issues raised by NAN related to trespassing at Wolf Creek. On the basis of these reviews, the Staff has determined that the Licensees are operating the facility in compliance with § 20.3(14), § 50.47, Appendix E to Part 50, Part 73, and § 100.3(a), and Technical Specifications 5.1.1 and 5.1.3 and that these regulations and license conditions for Wolf Creek have not been violated as a result of the alleged trespassing incidents at Wolf Creek.

Accordingly, NAN's request for action pursuant to § 2.206 is denied as described in this Decision. Because the possibility does exist that unauthorized persons may trespass onto owner-controlled property, the Staff will request the Licensees to address the issue of unauthorized individuals present within the owner-controlled area of the Wolf Creek site, and will ensure that unauthorized individuals are warned or advised of protective actions in accordance with NUREG-0654 § II.J, "Protective Response."

As provided by 10 C.F.R. § 2.206(c), a copy of this Decision will be filed with the Secretary of the Commission for the Commission's review.

FOR THE NUCLEAR  
REGULATORY COMMISSION

Thomas E. Murley, Director  
Office of Nuclear Reactor  
Regulation

Dated at Rockville, Maryland,  
this 26th day of May 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

## OFFICE OF NUCLEAR REACTOR REGULATION

Dr. Thomas E. Murley, Director

In the Matter of

Docket No. 50-293

BOSTON EDISON COMPANY  
(Pilgrim Nuclear Power Station)

May 27, 1988

Massachusetts Governor Michael S. Dukakis and Attorney General James M. Shannon filed a Petition on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners) with the Nuclear Regulatory Commission (NRC) requesting that the Director of the Office of Nuclear Reactor Regulation (NRR) institute a proceeding to modify, suspend, or revoke the operating license held by Boston Edison Company (BECo, the Licensee) for its Pilgrim Nuclear Power Station (Pilgrim). In particular, the Petitioners requested the NRC to (1) modify the Pilgrim license to bar restart of the facility until a plant-specific probabilistic risk assessment (PRA) is performed for Pilgrim and all indicated safety modifications are implemented; (2) modify the Pilgrim license to extend the current shutdown pending the outcome of a full hearing on the significant outstanding safety issues and the development and certification by the Governor of adequate emergency plans; and (3) issue an Order, effective immediately, to modify the Pilgrim license to preclude the Licensee from taking any step in its power ascension program until a formal adjudicatory hearing is held and findings of fact are made concerning safety questions raised regarding Pilgrim.

The relief sought by the Petitioners is based on allegations of (1) evidence of continuing serious managerial deficiencies at Pilgrim, (2) evidence that a plant-specific PRA as well as the implementation of any safety modifications indicated thereby should be required prior to Pilgrim's restart, and (3) evidence that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency during operations at Pilgrim.



## TECHNICAL ISSUES DISCUSSED: PROBABILISTIC RISK ASSESSMENT

Petitioners have not identified any unique or unacceptable severe accident risk for the Pilgrim plant that would warrant delay of restart until a probabilistic risk assessment is conducted.

### INTERIM DIRECTOR'S DECISION UNDER 10 C.F.R. § 2.206

#### INTRODUCTION

On October 15, 1987, Massachusetts Governor Michael S. Dukakis and Attorney General James M. Shannon filed a Petition on behalf of the Commonwealth of Massachusetts and its citizens (Petitioners) with the Nuclear Regulatory Commission (NRC) requesting that the Director of the Office of Nuclear Reactor Regulation (NRR) institute a proceeding to modify, suspend, or revoke the operating license held by Boston Edison Company (BECo, the Licensee) for its Pilgrim Nuclear Power Station (Pilgrim). In particular, the Petitioners requested the NRC to (1) modify the Pilgrim license to bar restart of the facility until a plant-specific probabilistic risk assessment (PRA) is performed for Pilgrim and all indicated safety modifications are implemented; (2) modify the Pilgrim license to extend the current shutdown pending the outcome of a full hearing on the significant outstanding safety issues and the development and certification by the Governor of adequate emergency plans; and (3) issue an Order, effective immediately, to modify the Pilgrim license to preclude the Licensee from taking any steps in its power ascension program until a formal adjudicatory hearing is held and findings of fact are made concerning safety questions raised regarding Pilgrim.

The relief sought by the Petitioners is based on allegations of (1) evidence of continuing serious managerial deficiencies at Pilgrim, (2) evidence that a plant-specific PRA as well as the implementation of any safety modifications indicated thereby should be required prior to Pilgrim's restart, and (3) evidence that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency during operations at Pilgrim.

On November 13, 1987, receipt of the petition was acknowledged. The Petitioners were advised that their Petition would be treated under the requirements of 10 C.F.R. § 2.206 of the Commission's regulations and that appropriate action would be taken within a reasonable time. The request for an immediately effective order to modify the Pilgrim license to preclude BECo from taking any

steps in its power ascension program until an adjudicatory hearing is held was denied. Notice of receipt of the Petition was published in the *Federal Register* (52 Fed. Reg. 44,503 (1987)).

On December 17, 1987, Governor Dukakis wrote a letter to NRC Chairman Zech and restated the position of the Commonwealth of Massachusetts that an adjudicatory hearing should be held before any decision is reached on the plant's future. On January 6, 1988, NRC Chairman Zech wrote Governor Dukakis, stating that the series of planned meetings described in Chairman Zech's letter would result in more citizens being heard by the Commission than would have been likely if an adjudicatory hearing had been held.

The Commission intends to hold a public meeting to be briefed by the Staff on the readiness of Pilgrim to resume operations before allowing restart. The filing of a 2.206 Petition, however, does not require the NRC to hold adjudicatory hearings with respect to issues raised by the Petition. *Illinois v. NRC*, 591 F.2d 12, 14 (7th Cir. 1979); *Porter County Chapter of the Izaak Walton League of America, Inc. v. NRC*, 606 F.2d 1363 (D.C. Cir. 1979); *Eddleman v. NRC*, 825 F.2d 46, (4th Cir. 1987); *Lorion v. NRC*, 785 F.2d 1038 (D.C. Cir. 1986). See also *Florida Power & Light Co. v. Lorion*, 740 U.S. 729 (1985). Petitioners' request for an adjudicatory hearing is denied.

For the reasons stated below, the Petitioners' request, insofar as it relates to the conduct of a PRA, is denied; a final decision with respect to the management and emergency preparedness issues is deferred.

## BACKGROUND

The NRC Staff found the overall performance at Pilgrim acceptable during the assessment period covered by the 1985 Systematic Assessment of Licensee Performance (SALP No. 85-99).<sup>1</sup> There was sufficient concern, however, about the facility's performance that Region I conducted a special in-depth Diagnostic Team inspection from February 18 to March 7, 1986 (Inspection Report No. 50-293/86-06, issued April 2, 1986). The team found that performance improvements were inhibited by (1) incomplete Staffing, particularly operators and key mid-level supervisory personnel; (2) a prevailing (but incorrect) view in the organization that the improvements made to date had corrected the problems; (3) reluctance on the part of the Licensee's management to acknowledge some

<sup>1</sup> This Decision refers to two SALPs. The first is identified as SALP No. 85-99 and relates to the Licensee's performance during the period October 1, 1984–October 31, 1985. The report of this SALP was initially issued by Region I on February 18, 1986. It was the subject of further correspondence dated May 23, 1986, between Region I and BECo. The second SALP is identified as SALP No. 86-99 and relates to the Licensee's performance during the period November 1, 1985–January 31, 1987. The report of this SALP was initially issued April 8, 1987. It was issued as a final report on June 17, 1987.

problems identified by the NRC; and (4) the Licensee's dependence on third parties to identify problems, rather than implementing an effective program for self-identification of weaknesses. Nonetheless, as stated in a letter from Region I to the Licensee, dated May 23, 1986, the Diagnostic Team inspection results confirmed the SALP Board conclusions for SALP No. 85-99. In that letter, Region I restated the belief that "performance in the operation of the facility was . . . acceptable although some areas were only minimally acceptable."

On April 12, 1986, the Licensee shut down Pilgrim because of equipment problems and operational difficulties. The NRC Regional Administrator for Region I acknowledged this shutdown in Confirmatory Action Letter (CAL) 86-10, which was issued that same date. On July 25, 1986, the Licensee stated that the facility would remain shut down for the completion of various modifications and for refueling. In an August 27, 1986, letter to Mr. J. Lydon of BECo, the Regional Administrator stated that although the Licensee's actions in response to CAL 86-10 appeared to be thorough, additional issues had been identified that had to be resolved before the reactor could be restarted. These issues included certain technical issues (overdue surveillances, malfunction of recirculation pump motor-generator field breakers, seismic qualification of emergency diesel generator phase-differential relays, and completion of modifications required by Appendix R to 10 C.F.R. Part 50), programmatic matters (the Licensee's action plan for improvements and the role of the Licensee's safety review committees), and the readiness of the plant and corporate Staffs to support restart. Further, the Regional Administrator stated in the same letter: "In light of the number and scope of the outstanding issues, I am not prepared to approve restart of the Pilgrim facility until you provide a written report that documents BECo's formal assessment of the readiness for restart operation."

At this time, Pilgrim remains shut down. The Staff has issued SALP Report No. 86-99 (June 17, 1987). Although this report identifies a number of performance problems (as did the previous SALP report), the Staff believes that the Licensee is dealing effectively with identified problems and is making progress toward improving performance.

The NRC asked the Licensee to submit a readiness report at least 45 days before the planned restart of the plant. In response to this request, the Licensee submitted a report entitled, "Pilgrim Nuclear Power Station Restart Plan" (Plan), on July 30, 1987. This Plan, which consists of two volumes, describes not only the programs, plans, and actions considered necessary by BECo management for a safe and reliable restart, but also the longer-term actions that are designed to ensure that there is continuing improvement in the safe operation of Pilgrim Station. Specifically, Volume 1 of the Plan contains descriptions of all the utility's programs that are either in progress or planned to correct and prevent recurrence of previously identified weaknesses, as well as a very limited discussion of the early results of some of the programmatic efforts

already undertaken. Volume 2 provides the status of the Licensee's efforts to meet commitments or resolve concerns in specific performance areas identified by either the Licensee, NRC, or the Institute of Nuclear Power Operations (INPO).

On October 26, 1987, and January 4, 1988, the Licensee provided revisions to Volume 2 of the Plan. The Licensee plans to submit a final update (to be presented as a Plan revision) on the overall progress of the Plan approximately two weeks before the scheduled restart of the Pilgrim Nuclear Power Station.

Because NRC is preparing to assess the overall effectiveness of the Plan in resolving previously identified weaknesses, NRC has welcomed public comments on the perceived strengths and weaknesses of both the programmatic efforts contained in the Plan (Volume 1) and the success of specific actions in meeting specific commitments/concerns (Volume 2). NRC provided an opportunity for such public comments at a public meeting held in Memorial Hall, Plymouth, Massachusetts, on February 18, 1988, and will factor the resulting oral and written comments into its assessment of the operational readiness of the Pilgrim Nuclear Power Station.

A discussion of each of the three bases for this Petition follows.

## DISCUSSION

### A. Management

The Petitioners allege that serious managerial deficiencies continue to exist at Pilgrim. As the bases for their Petition, the Petitioners cite: (1) consistently low ratings in SALP reports; (2) the Licensee's inability to sustain performance improvements; (3) the Licensee's poor enforcement record regarding the severity level and number of violations; and (4) recent news articles concerning security problems and the use of excessive overtime. Documents cited by the Petitioners include SALP Reports 85-99 and 86-99 and various Inspection Reports dated from 1985 to 1987.

The Petitioners provided no substantial new information or evidence that was not known to the NRC when it issued the "Interim Director's Decision Under 10 C.F.R. § 2.206," DD-87-14, 26 NRC 87, dated August 21, 1987 (hereinafter referred to as the Golden Interim Decision) in response to the Petition filed on July 15, 1986, by Massachusetts State Senator William B. Golden and others, also alleging deficiencies in the Licensee's management. A copy of the Golden Interim Decision is attached to this Decision (published as DD-87-14, *supra*) and is incorporated by reference; we will not repeat here the discussion of the management issue given in that decision.

Because the Pilgrim Station is shut down and will not be allowed to restart until authorized to do so by the NRC, there is no additional safety assurance to



be gained by addressing this aspect of the Petitioners' request at this time. A final Director's Decision regarding management is deferred until (1) the management deficiencies have been suitably addressed by the Licensee and (2) the NRC Staff completes its assessment of the Licensee's efforts. The management portion of this Petition will, therefore, be addressed in a subsequent decision.

#### **B. Probabilistic Risk Assessment and Attendant Plant Modifications**

The Petitioners have requested that the Pilgrim operating license be modified to require, prior to restart from the current outage, a plant-specific probabilistic risk assessment (PRA) and implementation of all safety modifications indicated therein. The Petitioners assert that such a requirement is necessary because of the combination of three factors that influence the potential risk of a postulated severe accident at Pilgrim Station. These factors are (1) a vulnerable primary containment (Mark I design), (2) a secondary containment (reactor building) not designed to provide an effective backup barrier, and (3) a large population in the immediate vicinity of the plant. Central to the Petitioners' request is the assertion that these three factors preclude consideration of the findings in draft NUREG-1150 concerning the remote probability of a severe accident and attendant early fatalities.<sup>2</sup> Finally, the Petitioners maintain that the Licensee, by its voluntary action in initiating a Safety Enhancement Program has, in effect, raised as a restart issue the question of the adequacy of the proposed plant modifications that are part of the Safety Enhancement Program.

The draft assessment documented in NUREG-1150 concluded that the probability of a severe accident with early fatalities is extremely remote. The Petitioners incorrectly assert that the finding of draft NUREG-1150 is not applicable to Pilgrim because of the characteristics cited by the Petitioners: a Mark I containment, an ineffective secondary containment, and a large surrounding population. It is inappropriate to apply the specific numerical risk estimates from draft NUREG-1150 to Pilgrim. Nevertheless, it is also inappropriate to conclude that unacceptable risk follows by virtue of the fact that Pilgrim uses a Mark I containment design.

In the Golden Interim Decision, the Staff provided an extensive discussion of the design basis and adequacy of the Pilgrim containment. The Petition has not identified any issues with respect to the Pilgrim containment design that were not previously considered by the Staff and resolved in the Golden Interim Decision. See DD-87-14, 26 NRC at 95-106.

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<sup>2</sup>The Reactor Risk Reference Document, Draft (NUREG-1150), February 1987.

Petitioners assert that the "large population in the immediate vicinity of Pilgrim" (Petition at 13) constitutes part of the basis for their request for a PRA. Petitioners allege that there is a "large population surrounding the plant" (*id.* at 14), and that "the EPZ population at this plant is among the highest in the country" (*id.* at 21). Section 2.206(a) of 10 C.F.R. requires petitioners to "set forth the facts that constitute the basis for the request." Petitioners do not provide amplifying information or details in support of these statements concerning population.

Although Pilgrim has an above-average population residing within 10 miles of the site, a number of other facilities have an even larger population residing nearby. Using 1982 data based on the 1980 Census, the resident population (about 41,000) surrounding Pilgrim up to a radius of 10 miles ranked twenty-sixth of eighty sites in operation or in the licensing process at that time. As of 1987, the population residing within a 10-mile radius of the Pilgrim plant is estimated by the Licensee to be about 62,000, with about 70,000 within the 10-mile Emergency Planning Zone (EPZ).<sup>3</sup> The 1982 data for U.S. nuclear power plants indicates that at least seventeen sites already had over 70,000 people residing within a 10-mile radius of the site. Petitioners present nothing unique about the population in the vicinity of Pilgrim that would merit further consideration.

Although the Commission requested PRAs of the Millstone 3 and Limerick facilities during the licensing review process, the Commission's regulations do not require the conduct of a PRA as part of the licensing basis for nuclear power plants. PRAs also have been conducted by some utilities as part of facility upgrades, such as those made under the Commission's Systematic Evaluation Program (SEP) or voluntarily by individual licensees. Although some licensees with facilities in areas of substantially above-average population density (Indian Point, Zion, Limerick) have conducted PRAs, other licensees with facilities located in areas of higher population density than Pilgrim, such as Oyster Creek, Beaver Valley, and Turkey Point, have not been required to conduct a PRA.

The Petitioners have not provided sufficient evidence of significant risk vulnerabilities associated with the primary and secondary containment design that are unique to Pilgrim, or unique aspects of the surrounding population (when taken individually or when considered in combination) to warrant the requirement for a plant-specific PRA prior to restart of Pilgrim.

The Staff has reviewed all points raised in the seven-page affidavit prepared by Steven C. Sholly that accompanied the Petition. This affidavit concerns the Pilgrim power ascension program, the potential risk associated with operation of Pilgrim at progressively higher power levels (based upon consideration of

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<sup>3</sup>The EPZ includes all of the town of Plymouth, Massachusetts, some of which is slightly more than 10 miles from Pilgrim.

the Shoreham PRA and the potential impact of external events), and the need for a plant-specific PRA for Pilgrim. The affidavit also discusses the Pilgrim Mark I primary containment and secondary containment. The Staff has dealt with the Pilgrim containments earlier in this response and in the Golden Interim Decision.

Regarding the Pilgrim power ascension program, Petitioners assert that the details have not been supplied and that it will be a "rapid ascension" to full power. A description of the Licensee's power ascension program was provided to the NRC on October 15, 1987 (BECo Letter 87-163). If power operation is approved by the NRC, the power ascension program to be performed as part of the Pilgrim restart effort will be a controlled and orderly process. It will have prior Staff review and approval, augmented monitoring by the NRC Staff, and "hold points" that require oral approval from the NRC before proceeding further. Thus, Petitioners' assertions regarding the Pilgrim power ascension program are without merit.

Regarding the potential risk of operation at progressively higher power levels and the potential impact of external events, the Staff agrees that operation at higher power levels may present higher risk than when operating at low power. Nevertheless, operation of the Pilgrim facility up to 100% power (1998 megawatts-thermal) has been previously analyzed and found acceptable by the Staff. Applicable documents include the Final Safety Analysis Report (FSAR) and the associated Safety Evaluation Report (SER), dated August 25, 1971. Additionally, the design basis for Pilgrim to withstand external events has already been considered and found acceptable in the FSAR and SER. Neither the Petition nor the affidavit provides information that renders these conclusions incorrect.

The affidavit refers to a PRA for Pilgrim that has been in progress. The Staff is aware that BECo has been conducting PRA activities for Pilgrim. However, this effort has not been completed nor has any portion of it been provided to the Staff. The regulations do not require a PRA as part of the licensing basis for nuclear power plants.<sup>4</sup> If analyses being voluntarily conducted by the Licensee reveal new information that materially alters the licensing basis, the Pilgrim Technical Specifications and 10 C.F.R. § 50.72 require that the NRC be informed and appropriate corrective actions be taken.

Accordingly, the affidavit does not present evidence that warrants the requirement of a plant-specific PRA prior to restart of Pilgrim.

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<sup>4</sup>The Commission is presently considering imposing requirements for plant-specific evaluations under an Individual Plant Evaluation (IPE) program. This program would include assessments of severe-accident risk of individual facilities. Conduct of the IPE program would not be a prerequisite to restart of Pilgrim or inhibit operation of other operating facilities. The Office of Nuclear Regulatory Research (RES) is also assessing the performance of the Mark I primary containment design. This assessment may impact decisions or yield regulatory action affecting Mark I facilities.

With regard to the Safety Enhancement Program, the Staff also addressed this matter in the Golden Interim Decision. The Staff is reviewing the modifications associated with the Safety Enhancement Program to ensure that they have no overall adverse safety impact on existing systems. Moreover, the Licensee's initiative to improve plant safety beyond the point of complying with NRC regulations is not a basis for opening the issue of the efficacy of any proposed plant modifications.

Because the Petitioners have not identified any unique or unacceptable severe-accident risk for the Pilgrim plant or documented that it poses an unreasonable threat to public health and safety, there is no merit in their request that restart be delayed until a PRA is conducted. Therefore, this request is denied.

### C. Emergency Preparedness

The Petitioners allege deficiencies in the current state of emergency planning and preparedness for Pilgrim Station. The Petitioners cite assessments performed by the Federal Emergency Management Agency (FEMA)<sup>5</sup> and the Massachusetts Executive Office of Public Safety<sup>6</sup> that conclude that emergency planning and preparedness at Pilgrim are inadequate to protect the health and safety of the public in the event of an accident. The Petitioners state that both agencies have identified deficiencies in (1) evacuation plans for public and private schools as well as day-care centers, (2) evacuation plans for the special-needs population, (3) evacuation plans for the transport-dependent population, (4) identifiable public shelters for the beach population, (5) a reception center for people evacuating by the northern route, and (6) the overall progress in planning and the apparent diminution in the state of emergency preparedness.

FEMA forwarded its report on the adequacy of emergency preparedness at Pilgrim to the NRC on August 6, 1987. In this report, FEMA specifically addressed the information provided in the First Barry Report in developing its findings.

On August 18, 1987, the NRC requested that the Licensee provide an action plan and schedule for assisting the Commonwealth of Massachusetts and local governments in addressing the FEMA-identified emergency planning issues for Pilgrim. The NRC stated that it viewed the emergency planning issues to be a matter of serious concern and that the determination to restart the plant will involve, in part, consideration of the resolution of the emergency planning issues

<sup>5</sup>Federal Emergency Management Agency "Self-Initiated Review and Interim Finding for the Pilgrim Nuclear Power Station," dated August 4, 1987.

<sup>6</sup>Massachusetts Executive Office of Public Safety, Secretary of Public Safety, Charles V. Barry, "Report to the Governor on Emergency Preparedness for an Accident at the Pilgrim Nuclear Power Station," dated December 16, 1986 (the "First Barry Report").



identified by FEMA. (A similar conclusion was stated in the Golden Interim Decision).

By letter dated September 17, 1987, the Licensee submitted to NRC an action plan and schedule summarizing the status of the issues and the assistance being provided by the Licensee to the Commonwealth and local authorities in the improvement of their emergency response programs. These efforts have included the development of an updated evacuation time estimate (ETE) study and traffic management plan, a study to identify public shelters for the beach population, and the identification of and provision for the special-needs and transportation-dependent populations within the 10-mile EPZ. In addition, the Licensee is providing professional planners to assist local governments and the Commonwealth in upgrading their plans and in the development of a new training program for offsite emergency response personnel. On October 26, 1987, the Licensee provided additional information on beach population and sheltering to the Commonwealth. In a letter to the Commonwealth, dated December 23, 1987, the Licensee forwarded a report entitled "Reception Center Feasibility Analysis."

The Petitioners acknowledge some progress has been made toward improving emergency preparedness, including identification of school/day-care populations, estimates of available resources to evacuate these populations, an updated ETE study, and estimates of the beach population and sheltering data. However, the Petitioners continue to identify concerns regarding the current planning efforts involving the identification of the special-needs and transport-dependent populations, shortcomings in the ETE study, inadequacies in the sheltering data, determination of a replacement for the northern reception center, and the conduct of an exercise.

On December 17, 1987, Governor Dukakis forwarded to the NRC a report prepared by Secretary Barry entitled, "Report on Emergency Preparedness for an Accident at Pilgrim Nuclear Power Station" (Second Barry Report). In this report, Secretary Barry provided additional information and background concerning the issues raised in the Petition.

The current status of the efforts to improve the offsite emergency response programs is as follows:

- Drafts of the local emergency plans have been completed. Six of these drafts have been forwarded by the Commonwealth to FEMA for informal technical review.
- Drafts of the local emergency plan implementing procedures have been prepared and are being reviewed by town officials.
- The draft Massachusetts Civil Defense Agency Area II Plan is complete and being reviewed by the Commonwealth.
- The draft of the Commonwealth Plan for Pilgrim is complete and being reviewed by the Commonwealth.

- A training program has been jointly developed by the Licensee and the Massachusetts Civil Defense Agency. The Massachusetts Civil Defense Agency, which has approved the training program, is reviewing the attendant lesson plans as they are being developed. Training for offsite emergency response personnel has begun.
- A northern reception center has been designated by the Commonwealth.

The NRC will continue to monitor the progress of the Licensee's efforts to assist Massachusetts and local governments in improving their emergency response programs. The Licensee has committed to conduct a full-participation exercise following the completion of these efforts. On September 17, 1987, the Licensee requested an exemption from the NRC requirement to conduct a biennial full-participation exercise in 1987. On December 9, 1987, the NRC granted the exemption, stipulating that the Licensee is to conduct a full-participation exercise for Pilgrim no later than June 30, 1988. On April 4, 1988, the Licensee requested a further extension of the full-participation exercise to the end of 1988. On May 11, 1988, the NRC granted a further extension of this requirement, but stipulated that a full-participation exercise be conducted prior to the end of calendar year 1988.

A decision on this portion of the Petitioners' request is deferred. However, the determination as to whether to restart Pilgrim will involve consideration of the emergency planning issues identified by FEMA.

### CONCLUSION

For the reasons discussed above, a decision cannot be made at this time regarding the management and emergency preparedness issues. These portions of the Petition will be addressed in a subsequent response. However, the NRC has required, and will continue to require, that the Pilgrim facility remain shut down until the management and emergency preparedness issues are dealt with to the satisfaction of the NRC.

For the reasons discussed above, the information identified by the Petition does not warrant the initiation of the requested actions in regard to the probabilistic risk assessment and attendant plant modifications. Accordingly, the Petitioners' request for action pursuant to 10 C.F.R. § 2.206 on this issue is denied.

As provided in 10 C.F.R. § 2.206(c), a copy of this Decision will be filed with the Secretary for the Commission's review.

FOR THE NUCLEAR  
REGULATORY COMMISSION

Thomas E. Murley, Director  
Office of Nuclear Reactor  
Regulation

Dated at Rockville, Maryland,  
this 27th day of May 1988.

Attachment:  
Golden Interim Decision

[The attachment has been omitted from this publication but may be found in the *NRCIs* as DD-87-14, 26 NRC 87 (1987), or in the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555.]

Denials of  
Petitions for  
Rulemaking

**DENIALS OF PETITIONS FOR RULEMAKING**



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF THE EXECUTIVE DIRECTOR FOR OPERATIONS

Victor J. Stello, Jr., Executive Director for Operations

In the Matter of

Docket No. PRM 50-25a

PORTER COUNTY CHAPTER OF THE  
IZAAK WALTON LEAGUE OF  
AMERICA, *et al.*

April 1, 1988

The Nuclear Regulatory Commission is denying a petition for rulemaking submitted by the Porter County Chapter of the Izaak Walton League of America, *et al.* The Petitioner requested a change in the Commission's regulations governing the extension of construction permits. Specifically, the Petitioner requested that the Commission not limit its inquiry in granting an extension to those reasons why construction was not timely completed but would require the Commission to consider whether good cause had been shown for continued construction of the reactor in light of all the circumstances at the time the request for an extension was filed. Commission decisions since the filing of the petition have emphasized that the decision to grant an extension should not be used to conduct a broad-based reconsideration of the initial decision to grant a construction permit. Since the petition would, in essence, require such broad-based reconsideration, the Commission has decided to deny the request for rulemaking.

**NRC: AUTHORITY OF EXECUTIVE DIRECTOR FOR  
OPERATIONS TO DENY PETITIONS**

Pursuant to the 10 C.F.R. § 1.40(o), the Executive Director for Operations is authorized to deny petitions for rulemaking of a minor or nonpolicy nature where the grounds for denial do not substantially modify existing precedent. In fact, the Commission has recently addressed this very issue and has seen no reason to modify its existing policy.

**CONSTRUCTION PERMIT: EXTENSION OF COMPLETION DATE  
(SCOPE OF PROCEEDING)**

The purpose of the construction permit extension process is not to engage in an unbridled inquiry into matters already addressed in the initial construction permit hearing. *Washington Public Power Supply System* (WPPSS Nuclear Project Nos. 1 & 2), CLI-82-29, 16 NRC 1221, 1227 (1982). A person who wants to raise health, safety, or environmental issues can do so in a request for the Commission to institute a show-cause proceeding under 10 C.F.R. § 2.206 or, to the extent appropriate, can seek to litigate such issues in the context of an operating license proceeding. The approach to deciding whether good cause has been shown is to limit the challenges to the request for an extension to those based on the reasons proffered by the permittee for the delay. *Id.* at 1228.

**CONSTRUCTION PERMIT: EXTENSION OF COMPLETION DATE  
(SCOPE OF PROCEEDING)**

The construction extension process is not a forum for the reconsideration of issues addressed in the construction permit hearing, nor is it an avenue for raising issues that can be addressed in a more appropriate forum such as a § 2.206 proceeding or an operating license proceeding. *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Unit 1), CLI-86-4, 23 NRC 113 (1986), *aff'd*, *Citizens Association for Sound Energy v. NRC*, 821 F.2d 725 (D.C. Cir. 1987).

**CONSTRUCTION PERMIT: EXTENSION OF COMPLETION DATE  
(SCOPE OF PROCEEDING)**

The Commission has repeatedly rejected attempts to broaden the scope of a construction permit extension proceeding. Avenues exist in which persons can raise safety and environmental concerns. The Commission does not believe that a full-scale relitigation in "a good-cause proceeding" of issues addressed elsewhere or that can be raised in a different proceeding would substantially improve the protection of public health and safety.

**CONSTRUCTION PERMIT: EXTENSION OF COMPLETION DATE  
(SCOPE OF PROCEEDING)**

The Commission has developed a test for determining whether a contention falls within the perimeter of the construction permit extension process. The contention must show that the applicant is responsible for the delay and has

acted intentionally and without a valid business purpose. *Public Service Co. of New Hampshire* (Seabrook Station, Unit 2), CLI-84-6, 19 NRC 975, 978 (1984).

#### CONSTRUCTION PERMIT: EXTENSION OF COMPLETION DATE (GOOD CAUSE)

A permittee may demonstrate that there was good cause for the past delay in plant completion or a permittee may show that its current and future actions are "good cause" for an allowance of more time for plant completion. This is so even when the delay results from past conduct by the permittee that sought to violate NRC requirements, which then resulted in a requirement to correct safety deficiencies flowing from the past conduct. *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Unit 1), CLI-86-15, 24 NRC 397 (1986). If the permittee discards and repudiates its past policy of violating NRC requirements, "any delays arising from the need to take corrective action would be delays for good cause." *Id.* at 403.

### DENIAL OF PETITION FOR RULEMAKING

#### I. BACKGROUND

In a submittal dated December 20, 1979, the Porter County Chapter of the Izaak Walton League, the Concerned Citizens Against Bailly Nuclear Site, the Businessmen for the Public Interest, Inc., James E. Newman, and Mildred Warner filed with the Commission, petition for rulemaking PRM-50-25a. An identical petition was filed on the same date by the State of Illinois and was denominated petition for rulemaking PRM-50-25. The Petitioners requested that the Commission modify 10 C.F.R. § 50.55(b) which provides:

If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: *Provided, however,* That upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as basis for extending the completion date.

The Petitioners sought to amend this section as an alternative to their attempt to intervene in the construction permit proceeding for Northern Indiana Public Service Company's (NIPSCO) Bailly Nuclear Generating Station. NIPSCO



canceled the plant and Petitioners' desire to intervene became moot as a result of cancellation. However, the Petitioners requested that the Commission consider modifying § 50.55(b). Specifically, the Petitioners requested that the good-cause determination must consider "whether the permittee has shown good cause for the continued construction of the plant in light of all the circumstances at the time of considering the application [for the extension]." In the view of the Petitioners, this rule would prohibit the Commission from limiting the extension proceeding to the reasons why construction was not completed by the latest completion date in the construction permit. The Commission received four comments on the petition from law firms representing various owners and operators of nuclear power plants. The comments were unanimous in their opposition to the petition.

In early 1985, both the State of Illinois and the private-citizen groups were contacted by the NRC in order to determine whether the Petitioners wanted to withdraw their request in light of the cancellation by NIPSCO of the Bailly Generating Station. On February 28, 1985, the State of Illinois sent a letter to the Secretary of the Commission withdrawing its petition for rulemaking (PRM 50-25). Attorneys for the private-citizen Petitioners were contacted and they agreed to withdraw the petition (PRM 50-25a). Approximately a year later, the attorney for the private citizens was again contacted and he stated that he would withdraw the petition. Followup information was sent on January 31, 1986. No response was forthcoming. Rather than delay further, the Commission will act upon the petition.

## II. DISCUSSION

Subsequent to the filing of the petitions, the Commission clarified the meaning of § 50.55(b). In *Washington Public Power Supply System* (WPPSS Nuclear Project Nos. 1 & 2), CLI-82-29, 16 NRC 1221 (1982), the Commission addressed the scope of the "good-cause" determination. First, the Commission noted that the purpose of the extension process was not to engage in an unbridled inquiry into matters already addressed in the initial construction permit hearing. *Id.* at 1227. The Commission then noted that a person who wanted to raise health, safety, or environmental issues could do so in a request for the Commission to institute a show-cause proceeding under 10 C.F.R. § 2.206 or, to the extent appropriate, would seek to litigate such issues in the context of an operating license proceeding. The Commission concluded that the approach to deciding whether good cause had been shown was to limit the challenges to the request for an extension to those based on the reasons proffered by the permittee for the delay. *Id.* at 1228. Thus, for example, a challenge to a permittee's need for an extension based on delays due to unusually severe weather could not be based on the need for the facility but only on the severity of the weather as it affected



permittee's ability to construct the facility. The Commission again addressed the issue of good cause shown in *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Unit 1), CLI-86-15, 24 NRC 397 (1986). In that case, the Commission held that a permittee may demonstrate that there was good cause for the past delay in plant completion or a permittee may show that its current and future actions are "good cause" for an allowance of more time for plant completion. This is so even when the delay results from past conduct by the permittee that sought to violate NRC requirements, which then resulted in a requirement to correct safety deficiencies flowing from the past conduct. In short, if the permittee discarded and repudiated its past policy of violating NRC requirements, "any delays arising from the need to take corrective action would be delays for good cause." *Id.* at 403.

The Commission revisited the construction permit extension process in *Public Service Co. of New Hampshire* (Seabrook Station, Unit 2), CLI-84-6, 19 NRC 975 (1984). The Commission reaffirmed and expanded on the WPPSS decision. Specifically, the Commission developed a test for determining whether a contention falls within the perimeter of the construction permit extension process. The contention must show that the applicant is responsible for the delay and has acted intentionally and without a valid business purpose. *Id.* at 978.

The Commission reemphasized the narrow scope of the construction permit extension proceeding in *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Unit 1), CLI-86-4, 23 NRC 113 (1986). In *Comanche Peak*, the Commission had to determine whether it could grant an extension of a construction permit after the construction permit had expired. The Commission determined that it could do so. More importantly, the Commission rejected a plea by the Citizens Association for Sound Energy (CASE) for a full-scale hearing on a new construction permit. 23 NRC at 117-20. Rather, the Commission referred the request for a hearing to the Atomic Safety and Licensing Board Panel for appropriate action. In the referral, the Commission limited the scope of any hearing to challenges to Texas Utilities' effort to demonstrate the existence of good cause. *Id.* at 121. By rejecting CASE's plea, the Commission reiterated its policy that the construction extension process is not a forum for the reconsideration of issues addressed in the construction permit hearing; nor is it an avenue for raising issues that can be addressed in a more appropriated forum such as a § 2.206 proceeding or an operating license proceeding. The Commission's determination in this case was upheld by the D.C. Circuit Court of Appeals on June 26, 1987. See *Citizens Association for Sound Energy v. NRC*, 821 F.2d 725 (D.C. Cir. 1987).

In summary, the Commission has repeatedly rejected attempts to broaden the scope of the construction permit extension proceeding. Avenues exist in which persons can raise safety and environmental concerns. The Commission does not believe that a full-scale relitigation in "a good cause proceeding" of

issues addressed elsewhere or that can be raised in a different proceeding would substantially improve the protection of public health and safety.

### III. FINDINGS

Based on the above considerations, the Commission hereby denies the petition for rulemaking PRM 50-25a, dated December 20, 1979, filed by the Porter County Chapter of the Izaak Walton League, *et al.*

Pursuant to the 10 C.F.R. § 1.49(o), the Executive Director for Operations is authorized to deny petitions for rulemaking of a minor or nonpolicy nature where the grounds for denial do not substantially modify existing precedent. This petition does not raise new policy issues and the grounds for denial of the petition are in accordance with existing precedent. In fact, the Commission has recently addressed this very issue and has seen no reason to modify its existing policy. Thus, denial of the petition falls within the scope of the Executive Director's delegated authority.

For the Nuclear Regulatory  
Commission

Victor Stello, Jr.,  
Executive Director for  
Operations

Dated at Rockville, Maryland,  
this 1st day of April 1988.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF THE EXECUTIVE DIRECTOR FOR OPERATIONS

Victor Stello, Jr., Executive Director for Operations

In the Matter of

Docket No. PRM 40-24

UNION CARBIDE CORPORATION

April 11, 1988

The Nuclear Regulatory Commission (NRC) is denying a petition for rule-making (PRM 40-24) submitted by the Union Carbide Corporation. The Petitioner requested that the NRC amend its regulations in four areas pertaining to uranium milling operations and closure requirements. Three of the amendments requested by the Petitioner are being denied due to changes made in NRC's regulations as a result of standards issued by the Environmental Protection Agency (EPA). The NRC regulatory changes that were necessary to conform to EPA's standards are required by law. The Petitioner's requests, which were received prior to promulgation of EPA's standards, are inconsistent with existing EPA requirements. The fourth area deals with a requested change to the assumed real interest rate used to cover the cost of long-term surveillance. This request is denied on the basis that the proposed change is inconsistent with the government's historical real rate of return.

UMTRCA (URANIUM MILL TAILINGS RADIATION CONTROL ACT OF 1978): COMPLIANCE WITH EPA REGULATIONS

A petition for rulemaking requesting the amendment of portions of the NRC regulations implementing UMTRCA (10 C.F.R. Part 40, Appendix A) which was filed before the revision of those regulations to conform to EPA standards (as required by law), will be assessed against the revised regulations, rather than the regulations to which the petition was addressed. Those proposals that are inconsistent with the EPA standards, as incorporated in NRC regulations, are rejected.

**REGULATIONS: INTERPRETATION (10 C.F.R. PART 40, APPENDIX A, CRITERION 1)**

Criterion 1 of Appendix A covers the selection of new tailings disposal sites or the adequacy of existing tailings disposal sites. A proposal to amend this criterion to provide for a long-term isolation period of 100 to 200 years would be inconsistent with EPA's longevity standard, now part of NRC's regulations. EPA requires reasonable assurance that control of radiation hazards be effective for 1000 years, to the extent reasonably achievable, and in any case, for at least 200 years.

**REGULATIONS: INTERPRETATION (10 C.F.R. PART 40, APPENDIX A, CRITERION 5)**

NRC requirements for groundwater protection contained in Criterion 5 (which covers the restoration of groundwater contaminated by seepage of toxic materials from mill tailings sites) have been totally revised as a result of EPA standards. At any site, new or existing, an applicant can apply for an alternate concentration limit (ACL) for groundwater constituents. Use of the aquifer is one of the factors upon which the ACL could be based.

**REGULATIONS: INTERPRETATION (10 C.F.R. PART 40, APPENDIX A, CRITERION 6)**

The NRC requirements for radon control have been significantly changed as a result of EPA requirements. The minimum 3-meter cover over tailings or wastes is no longer required. The radon release rate has been changed to not exceed the EPA-established average release rate of 20 picocuries per square meter per second to the extent practicable throughout the effective design life.

**REGULATIONS: INTERPRETATION (10 C.F.R. PART 40, APPENDIX A, CRITERION 10)**

This criterion imposes a charge on each mill operator to cover the cost of long-term surveillance. The total charge must be such that "with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance." Petitioner's proposal to use a 2% annual real interest rate, which is asserted to be a more accurate reflection of the historic earning power of investments versus the 1% rate used in NRC regulations, is rejected. The 2% annual real interest rate is based on an industrial yield, and it would not be appropriate to use those figures.



## DENIAL OF PETITION FOR RULEMAKING

### I. BACKGROUND

On November 30, 1982 (47 Fed. Reg. 53,899), the Nuclear Regulatory Commission (NRC) published a notice of receipt of a petition for rulemaking filed by the Union Carbide Corporation. The petition requested that the NRC amend portions of its regulations concerning criteria for the operation of uranium mills and the disposition of tailings or wastes resulting from these activities.

The Petitioner suggested specific amendments to Criteria 1, 5, 6, and 10 of Appendix A to Part 40. That appendix sets out the technical, financial, ownership, and long-term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of uranium mills and associated tailings. Appendix A was issued as part of the NRC's regulations implementing the Uranium Mill Tailings Radiation Control Act of 1978 (Pub. L. 95-604, 42 U.S.C. 7901, *et seq.*). These regulations were published in the *Federal Register* on October 3, 1980 (45 Fed. Reg. 65,531).

The Petitioner believes that the suggested amendments will continue to adequately protect the public health, safety, and the environment from radiation hazards associated with uranium milling. In addition, the Petitioner asserts that its suggested amendments are more cost-effective in that they would significantly reduce the costs of compliance at the facilities covered by the regulations.

#### The Suggested Amendments: Criterion 1

Criterion 1 covers the selection of new tailings disposal sites or the adequacy of existing tailings disposal sites. The Petitioner suggests that the long-term isolation of tailings and associated contaminants be defined as a 100-200-year period rather than the "thousands of years" period.

The Petitioner bases this suggestion on testimony before the NRC, the states of Colorado and New Mexico, the Environmental Protection Agency, and the Military Nuclear Systems Subcommittee of the Committee on the Armed Services. The Petitioner contends that this testimony indicates that:

1. The thousands-of-years period is unreasonable.
2. Technology does not exist to ensure the isolation of tailings for thousands of years.
3. The present requirement is costly and speculative.
4. It is difficult, if not impossible, to design a reclamation plan for a tailings pile that will withstand erosion over a period of thousands of years.

5. Tailings disposal should be based on a realistic period of time, such as 100-200 years.
6. The thousands-of-years requirement tends to relieve the government of any responsibility for ultimate control (Criterion 11).
7. The funds for long-term surveillance and control will be available to pay for any repair necessitated by damages resulting from any unexpected event (Criterion 10).

#### **The Suggested Amendments: Criterion 5**

Criterion 5 covers restoration of groundwater contaminated by seepage of toxic materials from mill tailings sites. The Petitioner contends that Criterion 5 attempted to distinguish existing from new sites. For new sites, the Petitioner states that seepage would not result in deterioration of groundwater supplies, and technical alternatives are provided to ensure that deterioration does not occur. The Petitioner states, however, that for existing sites no guidance was given concerning the standards to be used in developing the required site-specific seepage control and groundwater protection methods. The Petitioner's proposed amendment is intended to provide guidance it believes is missing for existing sites by specifically including consideration of the current use of the groundwater, naturally occurring characteristics of the groundwater, potential use of the groundwater based on needs of the community, size of the aquifer, availability of other drinking water sources, and the practicability of restoration.

#### **The Suggested Amendments: Criterion 6**

Petitioner proposes amendments to Criterion 6 that would delete requirements for (1) a 3-meter cover over tailings or wastes and (2) a surface exhalation of radon emanating from the tailings or wastes to less than 2 picocuries per square meter per second. Instead, suggested revisions would include cover designs that are based on site-specific analyses and concentrations of radon and other radioactive material beyond a small buffer zone of approximately 500 feet established around the covered areas. These concentrations would not exceed limits specified in Appendix B, Table II of 10 C.F.R. Part 20, excluding background. The Petitioner requests that remedial actions be cost-effective and based on a realistic assessment of the health hazard to the public that uranium mill tailings may pose. The Petitioner believes that health risks to the public from exposure to radium and radon from uranium mill tailings should be compared with risks from exposure to other natural sources of radium, radon, and their daughters as well as to other risks commonly accepted by the public. The Petitioner contends that, if such comparisons are made, it is clear that the

health risks to the public associated with uranium mill tailings have been greatly overestimated. The Petitioner believes that its proposal will ensure that mill tailings are controlled in a safe manner and that people and the environment will be protected from radiation hazards associated with tailings disposal.

#### The Suggested Amendments: Criterion 10

This criterion imposes a charge on each mill operator to cover the cost of long-term surveillance. The total charge must be such that, "with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance." The Petitioner proposes the use of a 2% interest rate rather than the current 1% interest rate. The Petitioner requests that this rate, which it considers to be a more accurate percentage spread between inflation and interest rates, be used.

## II. BASIS FOR REQUEST

As a basis for the requested action, the Petitioner stated it has facilities that are affected by the NRC regulations in both Agreement and Non-Agreement States. The requirements of Appendix A of 10 C.F.R. Part 40 also apply to Agreement States. As a result of Agreement States conforming their regulations to be compatible with NRC's, hearings and public comments were solicited. The Petitioner claims that "additional testimony and evidence have been elicited which were not available to the NRC in the consideration of its own regulations." In light of this new information, the Petitioner requests that the NRC reconsider its regulatory program. It is the Petitioner's contention that compliance with the amendments it proposes will protect public health and safety and the environment from radiation hazards associated with uranium milling byproduct material while significantly reducing the costs of compliance at its uranium mills.

## III. PUBLIC COMMENTS ON THE PETITION

A notice of filing of petition for rulemaking was published in the *Federal Register* on November 30, 1982 (47 Fed. Reg. 53,889). Interested persons were invited to submit written comments or suggestions concerning the petition by January 31, 1983. At the request of several commenters, the comment period was extended until May 2, 1983. The NRC received eleven comments in response to the notice; five from environmental groups; three from state agencies; and one each from the industry, an industrial representative, and a private citizen.

All the commenters, with the exception of the two from the industry and the industrial representative, were opposed to the petition. The main reasons cited by these commenters were:

1. Based upon Pub. L. 97-415 (issued January 4, 1983), which amended UMTRCA, the Environmental Protection Agency is to develop general environmental standards by October 1, 1983. The NRC will then review and revise its regulations to conform to the EPA standards. Therefore, any changes now would be premature.
2. The additional information provided by the Petitioner is of limited value.
3. Changes proposed by the Petitioner are not adequate to protect public health, safety, and the environment. The existing regulations will provide for this and are reasonable considering the hazards involved.

The comments from the industry and industrial representative are in total support of the petition. These commenters also identified other parts of the regulations that they felt should be changed.

#### IV. STAFF ACTION ON THE PETITION

The response to the petition for rulemaking was delayed because Pub. L. 97-415 (NRC Authorization Act of 1983, issued January 4, 1983) required EPA to develop general environmental standards by October 1, 1983, and for the NRC to then conform its regulations to those issued by the EPA. Most of the issues raised by the Petitioner were addressed in the final EPA environmental standards (48 Fed. Reg. 45,926 (Oct. 7, 1983)).

NRC's conformance to the EPA standards was completed in a two-step process. The first step resulted in a final rule published on October 16, 1985 (50 Fed. Reg. 41,852). This rule revised Appendix A to 10 C.F.R. Part 40 in order to conform to the EPA requirements except for those relating to groundwater protection. The second step also amended Appendix A and completed conformance to the EPA groundwater protection requirements. The NRC began this step with advance notice of proposed rulemaking on November 26, 1984 (49 Fed. Reg. 46,425) prior to developing amendments for the groundwater-protection-conforming changes.

As stated in the proposed rule to conform to groundwater protection requirements (51 Fed. Reg. 24,697 (July 8, 1986)), "When the NRC publishes its final rule on groundwater protection, the rulemaking proceedings necessary to conform its regulations to EPA standards will be completed. At that time, the NRC will make a final determination on the issues raised by the Petitioner and publish its findings in the *Federal Register*." The final rule conforming groundwater protection requirements, which completed the actions necessary to



conform NRC regulations to EPA standards, was published on November 13, 1987 (52 Fed. Reg. 43,553).

## V. REASON FOR DENIAL

The first three amendments to Appendix A to 10 C.F.R. Part 40 suggested by the Petitioner relate to Criteria 1, 5, and 6. These criteria were changed based on requirements in Pub. L. 97-415 that the NRC conform its regulations to the EPA standards. Accordingly, the Petitioner's proposals are assessed against the revised NRC regulations, rather than the regulations to which the petition was originally addressed. The reasons for denial follow.

*Criterion 1.* The Petitioner's proposal of a long-term isolation period of 100-200 years would be inconsistent with EPA's longevity standard, now part of NRC's rules. EPA requires reasonable assurance that control of radiological hazards be effective for 1000 years, to the extent reasonably achievable, and in any case for at least 200 years.

*Criterion 5.* The requirements for groundwater protection contained in Criterion 5 have been totally revised as a result of conformance to EPA standards. The current requirements are more stringent than those that the Petitioner requested to be changed. The Petitioner's proposed changes would be inconsistent with current EPA requirements now part of NRC's rules. However, the concerns of the Petitioner as far as contamination and use of an aquifer at existing sites have been incorporated into the current regulations. At any site, new or existing, an applicant can apply for an alternate concentration limit (ACL) for groundwater constituents. Use of the aquifer is one of the factors upon which an ACL could be based.

*Criterion 6.* The NRC requirements for radon control have been significantly changed as a result of EPA requirements. The minimum 3-meter cover is no longer required. The radon release rate has been changed to not exceed the EPA-established average release rate of 20 picocuries per square meter per second to the extent practicable throughout the effective design life. The requirements in this criterion have been reduced from those that the Petitioner requested be amended. However, further changes would be inconsistent with EPA requirements.

The fourth change suggested by the Petitioner is that dealing with Criterion 10. This criterion was not affected by the EPA standards. The Petitioner indicates that a 2% annual real interest rate is a more accurate reflection of the historic earning power of investments versus the 1% rate used in NRC's regulations.

The Petitioner's request is based on comments provided to the Colorado Department of Health by the Colorado Mining Association on June 5 and 17, 1981, and June 5, 1982. The basis for the 2% rate is "that a 2 percent annual



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ERRATA SHEET

Report Number: NUREG/CR-5015

Report Title: Improved Reliability of Residual Heat Removal Capability  
in PWRs as Related to Resolution of Generic Issue 99

Prepared by: Brookhaven National Laboratory

Date Published: May 1988

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