

**RAS 12803**

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD

LBP-06-28

**DOCKETED 12/28/06**

**SERVED 12/28/06**

Before Administrative Judges:

Dr. Paul B. Abramson, Chairman  
Dr. Anthony J. Baratta  
Dr. David L. Hetrick

In the Matter of

EXELON GENERATION COMPANY, LLC

(Early Site Permit for Clinton ESP Site)

Docket No. 52-007-ESP

ASLBP No. 04-821-01-ESP

December 28, 2006

INITIAL DECISION  
(Uncontested Issues)

## TABLE OF CONTENTS

I. INTRODUCTION AND BACKGROUND .....	1
A. Early Site Permit Application .....	2
B. Contested Portion of the Proceeding .....	4
C. Mandatory Hearing Requirement .....	6
D. Uncontested Portion of the Proceeding .....	13
II. ANALYSIS .....	16
A. Board Review of the Staff's Safety Review .....	17
1. Board's Review of Staff Application of Regulatory Guidance .....	18
2. Board's Review of Safety Matters Not Directly Addressed by Regulatory Guidance and Areas of Unclear Staff Logic .....	19
B. NEPA and Other Environmental-Related Matters .....	22
1. "Baseline" NEPA Determinations .....	23
2. Compliance with Sections 102(2) (A), (C), & (E) of NEPA and Subpart A of 10 C.F.R. Part 51 .....	26
3. Independent Consideration of the Final Balance Among Conflicting Factors .....	29
4. Ultimate Determination vis-a-vis NEPA Regarding ESP Issuance .....	30
C. Selected Examples and Considerations .....	31
1. Selected Examples of Unclear Logic in FSER .....	31
2. Instances of Non-Verification of Facts Asserted by the Applicant .....	35
3. An Example Regarding the Staff's NEPA Review .....	38
4. Logic Behind Hydrology Permit Conditions .....	39
D. Completeness of COL Action Items and Open Items .....	41
E. General Observations Regarding the Process .....	42
III. CONCLUSION .....	44

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I. INTRODUCTION AND BACKGROUND

1.1 On November 7 and 8, 2006, this Licensing Board conducted an evidentiary hearing in Decatur, Illinois, pursuant to the mandatory hearing requirements (described below in Part 1.C) for the pending application of Exelon Generation Company, LLC (“Exelon” or “Applicant”) for an application seeking an Early Site Permit (“ESP”) for its site in Dewitt County, Illinois (approximately 6 miles east of Clinton, Illinois, and commonly referred to as the “Clinton Site”), pursuant to Subpart A of 10 C.F.R. Part 52.

1.2 This Initial Decision sets forth the findings of the Board with respect to the mandatory hearing requirements of Section 189a(1)(A) of the Atomic Energy Act of 1954 (AEA), 42 U.S.C. § 2239(a)(1)(A), the National Environmental Policy Act (“NEPA”), and Commission regulations, as guided by Commission direction. As described below, we find that the Staff’s review of the application has been adequate, and the record of this proceeding sufficient, to support the required safety-related findings. Further, we find that the NRC Staff

has complied with NEPA (and implementing regulations), and, having performed an independent assessment of the required environmental considerations, we find that the ESP should be issued subject to the COL Action Items, Permit Conditions (as modified by this Order), and all other items not resolved at this point, as indicated in the NRC Staff's Final Safety Evaluation Report and Final Environmental Impact Statement. Subject to any review by the Commission, this decision completes the Board's work in this proceeding.

I.A. ESP Application

1.3 As provided in 10 C.F.R. § 52.39, an ESP allows a future applicant for a construction permit ("CP"), an operating license ("OL"), or a combined license ("CL" or "COL"), to seek early NRC review and approval of some siting and environmental issues, and therefore, to "bank" a site for up to 20 years in anticipation of its future reference in an application for a CP or COL. See 10 C.F.R. § 52.27. An ESP is, in fact, a "partial construction permit," authorizing limited construction activities when issued.<sup>1</sup>

1.4 As permitted by 10 C.F.R. Part 52, Exelon has not selected a specific reactor type for the site. Instead, Exelon developed a plant parameter envelope (PPE)<sup>2</sup> to serve as a surrogate for design information. Exelon developed its PPE using information from several reactor plant designs that are either currently commercially available or anticipated to be commercially available within the term of the ESP, including the Advanced Boiling Water Reactor (ABWR), the AP1000 Reactor, the Pebble Bed Modular Reactor (PBMR), the Gas

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<sup>1</sup> 10 C.F.R. § 52.21.

<sup>2</sup> At the CP or COL stage, an applicant must demonstrate that the chosen reactor fits within the site parameters set forth in the ESP's PPE, if it wishes to treat as "resolved" any related issues from the ESP review. See 10 C.F.R. § 52.39(a)(2). Also, in order to satisfy the regulatory requirements in 10 C.F.R. §§ 52.17(a)(2) and 52.18, the Staff and the Applicant's environmental review must "focus upon the environmental effects of construction and operation of a reactor, or reactors, which have characteristics that fall within the postulated site parameters."

Turbine Modular Helium Reactor (GTMHR), the Advanced CANDU Reactor (ACR), the International Reactor Innovative and Secure Reactor (IRIS), and the Economic Simplified Boiling Water Reactor (ESBWR).<sup>3</sup> The PPE values serve as a set of parameters that are intended to bound the impacts of a reactor or reactors that might be deployed at the site.<sup>4</sup> The PPE values are listed in Appendix A of the NRC Staff's Final Safety Evaluation Report ("FSER")<sup>5</sup> and Appendix J of the Staff's Final Environmental Impact Statement ("FEIS"),<sup>6</sup> and were used by the Applicant and the Staff to assess the future use of the Clinton ESP site from both a safety and an environmental perspective.

1.5 10 C.F.R. § 52.17 sets forth the required content of an ESP application. Section 52.17 also allows an ESP applicant to make a number of choices regarding the scope, and therefore the content, of its ESP application. One such choice relates to the development of an emergency plan ("EP"). Section 52.17(b)(2) states that an ESP applicant may propose for review and approval by the NRC (i) major features of its emergency plan, or (ii) a complete and integrated emergency plan. Exelon chose the former course, submitting fourteen major features of the EP, thirteen of which the Staff found acceptable.<sup>7</sup> Having submitted proposed

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<sup>3</sup> See NUREG-1844, "Safety Evaluation Report for an Early Site Permit (ESP) at the Exelon Generation Company, LLC (EGC) ESP Site," at 1-5 to -7 [hereinafter "FSER"]; see also Prefiled Testimony of Thomas P. Mundy on Exelon Generation Company's ESP Application (Oct. 17, 2006) at 6-8 [hereinafter Mundy Testimony].

<sup>4</sup> See FSER at 1-5; NUREG-1815, "Environmental Impact Statement for an Early Site Permit (ESP) at the Exelon ESP Site," at 1-2 [hereinafter "FEIS"].

<sup>5</sup> See FSER, app. A.4.

<sup>6</sup> See FEIS, app. J.

<sup>7</sup> The Staff accepted the Applicant's major features A-G, I-L, O & P which included: assignment of responsibility (organization control); onsite emergency organizations; emergency response support and resources; emergency classification system; notification measures; emergency communications; public education and information; accident assessment; protective response; radiological exposure control; medical and public health support; radiological

(continued...)

major features, the Applicant will be required to submit a complete and integrated emergency plan if it chooses to submit a COL or CP in the future.<sup>8</sup>

1.6 An applicant may also, according to 10 C.F.R. § 52.17, choose to submit “a plan for redress of the site,” which if accepted as part of an approved ESP would allow an applicant to perform certain pre-construction activities (as defined by 10 C.F.R. § 50.10(e)(1)) at the site, without additional authorization. Exelon chose to submit a site redress plan to demonstrate “that redress carried out under the plan [would] achieve an environmentally stable and aesthetically acceptable site suitable for whatever non-nuclear use,”<sup>9</sup> and the NRC Staff reviewed Exelon’s plan in the FEIS.<sup>10</sup>

#### I.B. Contested Portion of the Proceeding

1.7 The Board’s and Commission’s earlier rulings on the contested portions of this proceeding are fully set forth in LBP-04-17, 60 NRC 229 (2004), and LBP-05-19, 62 NRC 134 (2005), rev. denied, CLI-05-29, 62 NRC 801 (2005), aff’d, Envtl. Law and Policy Ctr. v. NRC, No. 06-1442 (7th Cir. Dec. 5, 2006), along with thorough discussions of the procedural history. We do not recount that information here, but provide the following brief summary.

1.8 On September 25, 2003, Exelon filed with the Nuclear Regulatory Commission (NRC) an application to obtain the subject Early Site Permit. The Commission issued a December 8, 2003 Notice of Hearing and Opportunity To Petition for Leave to Intervene

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<sup>7</sup>(...continued)  
emergency response training; and responsibility for the planning effort (development, periodic review, and distribution of emergency plans). See FSER at 13-19 to -80. The Staff did not accept the Applicant’s proposed Major Feature H (related to emergency facilities and equipment), because the Applicant did not describe the feature in sufficient detail. See FSER at 13-43.

<sup>8</sup> See FSER at 13-17 to -79.

<sup>9</sup> 10 C.F.R. § 52.17(c).

<sup>10</sup> See FEIS at 10-4, 10-9.

(“Notice of Hearing”), which was subsequently published in the Federal Register at 68 Fed. Reg. 69,426 (Dec. 12, 2003). In response to that notice, several entities (“Clinton Petitioners”) filed a request for a hearing and petition to intervene in the proceeding on the application.<sup>11</sup> The Commission referred the matter to the Atomic Safety and Licensing Board Panel, and on March 22, 2004, a Licensing Board was constituted to preside over the Exelon ESP adjudicatory proceeding.<sup>12</sup>

1.9 In ruling on the petition to intervene, the Board found the Clinton Petitioners to have demonstrated standing and to have proffered one admissible contention regarding energy alternatives, including wind power and solar power alternatives, as well as a mix of those alternatives along with the gas-fired generation and “clean coal” resource alternatives. (Contention 3.1).<sup>13</sup> Subsequently, responding to a Staff request for additional information (“RAI”), Exelon provided the NRC with additional analysis regarding alternative technologies for generating power, including combinations of wind and solar technology with coal and natural gas fueled facilities. Based on the information provided in the RAI response, and its later incorporation and analysis by the Staff in a Draft Environmental Impact Statement, Exelon filed a motion for summary disposition of the lone admitted contention, claiming that the analysis had cured the failure alleged by the Clinton Petitioners.<sup>14</sup> The Board granted Exelon’s motion for

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<sup>11</sup> See Hearing Request and Petition to Intervene by Environmental Law and Policy Center, Blue Ridge Environmental Defense League, Nuclear Information and Resource Service, Nuclear Energy Information Service, and Public Citizen (Jan. 12, 2004).

<sup>12</sup> See 69 Fed. Reg. 15,910 (Mar. 26, 2004); CLI-04-8, 59 NRC 113, 119 (2004). Subsequently, on August 6, 2004, the Licensing Board was reconstituted to form the Board currently sitting in this proceeding. See 69 Fed. Reg. 49,916 (Aug. 12, 2004).

<sup>13</sup> See LBP-04-17, 60 NRC at 250, 252.

<sup>14</sup> See Exelon’s Motion for Summary Disposition of Contention 3.1 (Mar. 17, 2005).

summary disposition of Contention 3.1.<sup>15</sup> Ruling on an appeal of the Board's ruling, granting Exelon's summary disposition motion and rejecting a proposed amended contention, the Commission denied review,<sup>16</sup> and both decisions were recently affirmed by the U.S. Court of Appeals for the Seventh Circuit.<sup>17</sup> Accordingly, the balance of this proceeding was conducted as an uncontested hearing.

I.C. Mandatory Hearing Requirement

1.10 The genesis of the mandatory hearing requirement is Section 189a(1)(A) of the Atomic Energy Act of 1954 (AEA), which provides, in relevant part, that "[t]he Commission shall hold a hearing after thirty days' notice and publication once in the Federal Register, on each application . . . for a construction permit for a [production or utilization] facility." 42 U.S.C. § 2239(a). In the context of an Early Site Permit, Commission regulations implement the mandatory hearing requirement of Section 189a through 10 C.F.R. §52.21, which provides, in relevant part, that the Board shall "determine whether, taking into consideration the site criteria contained in 10 CFR Part 100, a reactor, or reactors, having characteristics that fall within the parameters for the site, [and which meets the terms and conditions proposed by the Staff in the SER], can be constructed and operated without undue risk to the health and safety of the public." Additionally, 10 C.F.R. § 2.104(b) sets forth the Commission's procedural regulations specifying the issues to be addressed in uncontested proceedings.<sup>18</sup>

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<sup>15</sup> See LBP-05-19, 62 NRC at 183.

<sup>16</sup> See CLI-05-29, 62 NRC 801.

<sup>17</sup> See Envntl. Law and Policy Ctr. v. NRC, No. 06-1442 (7th Cir. Dec. 5, 2006).

<sup>18</sup> It is interesting to note that 10 C.F.R. § 2.104 is a procedural regulation, simply setting forth the required contents of a notice of hearing the Agency is to issue when an application on which a hearing is required by the AEA is received. However, the regulation is quite instructive in that no other single provision sets forth all of the specific matters to be considered and determinations to be made by the licensing board in these mandatory hearing

(continued...)

1.11 For uncontested license applications, Section 52.21 and the notice requirements of Section 2.104(b)(2) (and the Notice of Hearing itself) outline the Board's obligation to "determine":<sup>19</sup>

- (i) Without conducting a de novo evaluation of the application, whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission's staff has been adequate to support affirmative findings on (b)(1)(i) through (iii) specified in [10 C.F.R. § 2.104] and a negative finding on (b)(1)(iv) specified in [10 C.F.R. § 2.104] proposed to be made and the issuance of the construction permit proposed by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, and
- (ii) If the application is for a construction permit for a nuclear power reactor, a testing facility, a fuel processing plant, a uranium enrichment facility, or other facility whose construction or operation has been determined by the Commission to have a significant impact on the environment, whether the review conducted by the Commission pursuant to the National Environmental Policy Act (NEPA) has been adequate.<sup>20</sup>

1.12 Section 51.105(a)(1)(3) and the notice requirements of Section 2.104(b)(3) (and the Notice of Hearing itself) outline the three NEPA-related matters the Board is required to address:

- (i) Determine whether the requirements of section 102(2)(A), (C), and (E) of [NEPA] and subpart A of part 51 of this chapter have been complied with in the proceeding;

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<sup>18</sup>(...continued)  
proceedings.

<sup>19</sup> The Commission, responding to confusion regarding the use of both "consider" and "determine" when describing the Board's review responsibility, instructed that in the context of the Board's mandatory hearing responsibilities the terms should be viewed as "essentially synonymous." CLI-05-17, 62 NRC at 36. Continuing its discussion the Commission "remind[ed] the boards, however, that their review of a contested issue is quite different from their review of an uncontested one, and that this difference is reflected, to a considerable extent, in the depth of the boards' review (i.e., de novo or not)." *Id.* at 38 (emphasis in original).

<sup>20</sup> 10 C.F.R. § 2.104(b)(2).

- (ii) Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; and
- (iii) Determine whether the construction permit should be issued, denied, or appropriately conditioned to protect environmental values.<sup>21</sup>

The Commission has advised that we are to treat the regulatory mandates above as applicable to the uncontested portion of a hearing, which is also referred to as the “mandatory hearing.”<sup>22</sup> In addressing these latter charges, we interpret clause (ii) to mean that we are to “independently consider” the referenced “balance among conflicting factors” in making the “determination” required by clause (iii).<sup>23</sup>

1.13 While 10 C.F.R. § 2.104(b)(2) outlines all of the safety issues relevant to construction permits (which include Early Site Permits), not all of those issues are ripe for review in an ESP Proceeding.<sup>24</sup> The Commission’s December 12, 2003 Notice of Hearing explicitly sets forth the issues that, pursuant to the Atomic Energy Act of 1954, are relevant to this ESP proceeding:

- (1) Whether the issuance of an ESP will be inimical to the common defense and security or to the health and safety of the public (Safety Issue 1); and, (2) whether, taking into consideration the site criteria contained in 10 CFR Part 100, a reactor, or reactors, having characteristics that fall within the parameters for the site, can be constructed and operated without undue risk to the health and safety of the public (Safety Issue 2).<sup>25</sup>

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<sup>21</sup> 10 C.F.R. § 2.104(b)(3).

<sup>22</sup> See CLI-05-17, 62 NRC at 34-35.

<sup>23</sup> This interpretation seems appropriate, notwithstanding the Commission’s advice in CLI 05-17 that it intended the terms “consider” and “determine” to be synonymous. Id. at 36.

<sup>24</sup> See 10 C.F.R. § 52.21.

<sup>25</sup> 68 Fed. Reg. at 69,427.

1.14 In March 2005, presented with the first mandatory hearings to be conducted by this Agency in nearly two decades,<sup>26</sup> the Chief Administrative Judge of the Atomic Safety and Licensing Board Panel certified to the Commission (on behalf of the four Licensing Boards with then-pending proceedings), a series of questions regarding the scope and conduct of these hearings.<sup>27</sup> In a July 28, 2005 Memorandum and Order, the Commission ruled on the certified questions, providing guidance on the scope of a board's responsibility and review in the uncontested portion of a mandatory hearing.<sup>28</sup>

1.15 Our regulations require the licensing board to perform two types of inquiries with respect to safety matters: first, "whether the application and the record of the proceeding contain sufficient information, . . . to support a negative finding on Safety Issue 1 above, and an affirmative finding on Safety Issue 2," and second, "whether . . . the review of the application by the Commission's staff has been adequate to support" those same findings.<sup>29</sup> Although these determinations are to be made "without conducting a de novo evaluation of the application,"<sup>30</sup> because a de novo review might well involve unfettered repetition of the Staff's work, this limitation does little to clarify the precise scope of review contemplated by the charges to

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<sup>26</sup> At the time, there were three pending proceedings for a nuclear power plant early site permit: the current proceeding, Exelon Generation Co., LLC (Early Site Permit for Clinton ESP Site), Docket No. 52-007; Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site), Docket No. 52-008-ESP; System Energy Res., Inc. (Early Site Permit for Grand Gulf ESP Site), Docket No. 52-009-ESP, as well as one license proceeding to construct and operate a uranium enrichment facility, Louisiana Energy Servs., L.P. (National Enrichment Facility), Docket No. 70-3103-ML, and one additional, and since initiated proceeding regarding a license for a uranium enrichment facility, USEC Inc. (American Centrifuge Plant), Docket No. 70-7004.

<sup>27</sup> See LBP-05-07, 61 NRC 188 (2005).

<sup>28</sup> See CLI-05-17, 62 NRC 5.

<sup>29</sup> 68 Fed. Reg. at 69,427; see also CLI-05-17, 62 NRC at 39; 10 C.F.R. § 2.104(b).

<sup>30</sup> 10 C.F.R. § 2.104(b)(2)(i); see CLI-05-17, 62 NRC at 39.

determine whether the record and the Staff's review support the required findings. Taken on its face, at its most literal reading, and without Commission guidance, these charges would require each member of the Board to scour the entire record of the proceeding, including the many hundreds of pages included in the application, the RAIs and responses, the NRC Staff's FSER and FEIS, and sufficiently investigate all technical, economic, and legal matters covered therein to enable him or her to affirm or disaffirm that the conclusions of the Staff were supported in the record.

1.16 In its July 28, 2005 Memorandum and Order, the Commission attempted to more clearly delineate the respective roles of a licensing board and the Staff. The Commission (a) advised that a board's task is "to constitute a check on the understanding of the staff,"<sup>31</sup> (b) cautioned that "truly independent review . . . does not mean that multiple reviews of the same uncontested issues – first by the NRC Staff, then by the ACRS, and finally by a licensing board – would be necessary to serve this purpose [of constituting a check on the understanding of the staff],"<sup>32</sup> and (c) summarized that "boards should conduct a simple 'sufficiency' review of uncontested issues."<sup>33</sup> While a casual reading of the foregoing guidance might lead to the inference that the Commission had in mind a relatively cursory effort on the part of a licensing board, that cannot be the case. For, speaking again to uncontested portions of a hearing, the Commission set out a different view of our task: "when considering safety and environmental

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<sup>31</sup> CLI-05-17, 62 NRC at 40 (quoting AEC Memorandum Concerning Mandatory Hearing Requirement Under Atomic Energy Act," published in Hearings before the Joint Committee on Atomic Energy, 87th Cong., 1st Sess., "Radiation Safety and Regulation" at 376 (GPO 1961)).

<sup>32</sup> CLI-05-17, 62 NRC at 40 (emphasis in original).

<sup>33</sup> Id. at 39. In explaining this view, the Commission noted that "applying a less stringent sufficiency standard when examining uncontested issues merely recognizes the inherent limitations on a board's review . . . . [and] [a]s a practical matter . . . it would simply not be possible for the two technical members of the panel to evaluate the totality of the material relevant to safety matters that the Staff and ACRS have generated through many months of work." Id. at 40 (internal quotations omitted).

matters not subject to the adversarial process,” the Board “should inquire whether the NRC Staff performed an adequate review and made findings with reasonable support in logic and fact.”<sup>34</sup> This latter explanation establishes our task to be to investigate and comprehend the facts underlying, and the logic behind, the Staff determination, and from those inquiries to develop the basis for our determinations.<sup>35</sup>

1.17 Further clarifying how we are to approach this task, the Commission noted that with respect to uncontested proceedings — even as to the three “baseline” NEPA issues on which a Board is required under our regulations to make its own independent judgment — “the NRC Staff’s underlying technical and factual findings are not open to board reconsideration unless, after a review of the record, the board finds the NRC Staff review inadequate or its findings insufficient.”<sup>36</sup> The Commission reminded the Boards that, although we are to ensure that the Staff made findings with reasonable support in logic and in fact, “[t]his is not to say that we expect our licensing boards to follow a cursory, hands-off approach . . . . On the contrary, . . . we anticipate that our boards will carefully probe those findings by asking appropriate questions and by requiring supplemental information when necessary . . . .”<sup>37</sup>

1.18 In sum, we are strongly guided in our interpretation of the charge of the Commission’s December 2003 Notice of Hearing to “determine” whether the record supports an affirmative (or negative) determination and whether the Staff’s review supports its decision, by two principles set out by the Commission: (a) “boards should inquire whether the NRC Staff

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<sup>34</sup> Id. at 39 (emphasis added).

<sup>35</sup> See CLI-06-20, 64 NRC 15, 25 (2006). Further, we are directed that “the boards may probe the Staff for additional testimony or record material when necessary to ascertain whether the Staff had reasonable bases for the Staff’s final determinations.” Id.

<sup>36</sup> CLI-05-17, 62 NRC at 39-40.

<sup>37</sup> Id. at 40.

performed an adequate review and made findings with reasonable support in logic and fact”;<sup>38</sup> and (b) the Staff’s underlying technical and factual findings are not open to Board reconsideration unless we find the Staff review inadequate or its findings insufficient.<sup>39</sup>

1.19 Applying these principles to the proceeding at hand, the Board found in many instances that the technical portions of the Staff documents in the record (particularly the SER and, to some degree, the EIS) did not support a finding that the Staff’s review supported its decisions.<sup>40</sup> Rather, we found that in many instances these documents did not lend themselves to our making this type of judgment because those sections of the documents merely state what determinations were made and, occasionally, where applicable, identify the source of facts or analytical methodology used to reach the determinations. Thus, the record as initially presented to us often did not supply adequate technical information or flow of logic to permit a judgment as to whether the Staff had a reasonable basis for its conclusion(s).<sup>41</sup> As a result,

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<sup>38</sup> Id. at 39.

<sup>39</sup> See id. at 39-40.

<sup>40</sup> We interpret the requirements of 10 C.F.R. § 51.105(a)(2), wherein we are required to “independently consider the final balance among conflicting [environmental] factors contained in the record of the proceeding with a view to determining the appropriate action to be taken,” to simply direct us to examine the record independently to formulate the basis for the determination required by 10 C.F.R. § 51.105(a)(3), to “[d]etermine, after weighing the environmental, economic, technical and other benefits against environmental and other costs, and considering reasonable alternatives, whether the construction permit . . . should be issued, denied, or appropriately conditioned to protect environmental values.” We do not read 10 C.F.R. § 51.105(a)(2) as establishing any requirement to go beyond the record, but rather as a requirement simply to independently perform the required weighing described in clause (a)(3) based upon the record.

<sup>41</sup> We have not attempted to determine whether the Staff’s conclusions “were the right ones,” as the Commission suggested in CLI-05-17, 62 NRC at 40, because such a determination would require us to substitute our judgment for that of the Staff and would thereby be tantamount to a de novo review. We have, instead, applied, as the bulk of the Commission guidance indicates we should, what is in effect a “substantial evidence” test that focused on whether the Staff’s conclusions are reasonable given the support that exists in the record - not whether those conclusions are the only ones a reasonable person could reach from  
(continued...)

because part of our charge is to determine whether the Staff's review was sufficient, this Board found it necessary to examine in more depth a major portion of the record and to supplement it with information sought in more than two hundred written inquiries. In our view, the lack of explanation and lack of clarity of logic found in a large portion of the FSER and, to a lesser degree, the FEIS placed an unnecessary burden on all participants, including the Board, and could have been avoided by a more detailed initial Staff explanation of its analysis and reasoning.

I.D. Uncontested Portion of the Proceeding

1.20 In an April 17, 2006 Order, the Board requested from the Applicant and the Staff a number of foundational documents associated with the ESP Application and the Staff's review thereof, including Exelon Safety Analysis Report (SAR), Site Redress Plan, Emergency Plan (EP), and the Environmental Report (ER).<sup>42</sup> The Board followed that order with a series of orders requesting further information regarding the Staff's review because of the lack of clarity and logic in many portions of the FSER and FEIS. Since the Commission directed that we focus on specific issues rather than ask the Staff for general clarification and foundation,<sup>43</sup> those orders included more than two hundred specific inquiries regarding the Staff's review of health and safety matters and of environmental matters.<sup>44</sup> In addition, the Board conducted two

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<sup>41</sup>(...continued)  
the facts set out in the record.

<sup>42</sup> See Licensing Board Order (Request for Documents and Briefings) (April 17, 2006) (unpublished) [hereinafter April 17 Board Order].

<sup>43</sup> See CLI-06-20, 64 NRC at 23.

<sup>44</sup> See Licensing Board Order (Requesting Staff Responses to Attachment A Regarding Clinton ESP FSER) (July 20, 2006) (unpublished) [hereinafter July 20 Board Order]; Licensing Board Order (Addressing: (a) Commission Order dated 7/26/06; (b) requiring briefings in preparation for a public hearing; and (c) establishing a preliminary schedule) (Aug. 2, 2006) (unpublished) [hereinafter Aug. 2 Board Order]; Licensing Board Order (Reconsidering Inquiry  
(continued...)

telephone conferences with the Applicant and the Staff relative to the mandatory hearing prior to the two-day oral hearing.<sup>45</sup>

1.21 Pursuant to an August 2, 2006 Board Order, the Applicant and the NRC Staff submitted briefs on the required mandatory hearing safety and environmental findings on September 14, 2006.<sup>46</sup> On October 2, 2006, the Board issued a Notice of Hearing and of Opportunity to Make Oral or Written Limited Appearance Statements that outlined, for the public, the date, time, and place of the mandatory hearing and limited appearance session, and in addition, described the matters that would be addressed at the hearing.<sup>47</sup> Subsequently, on October 17, 2006, the parties submitted prefiled direct testimony addressing the safety and environmental determinations.<sup>48</sup>

1.22 On October 23, 2006, the Board issued an Order providing the parties with guidance on various administrative matters associated with the mandatory hearing, including

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<sup>44</sup>(...continued)

88; Following up on the Staff's Response to Inquiries; and Requiring Supplementation Regarding FSER Follow-Up Items not treated as COL Action Items) (Aug. 17, 2006) (unpublished) [hereinafter Aug. 17 Board Order]; Licensing Board Order (Requesting Staff Responses to Attachment A Regarding Clinton ESP FEIS) (Sept. 6, 2006) (unpublished) [hereinafter Sept. 6 Board Order]; Licensing Board Order (Additional Administrative Matters for Mandatory Hearing) (Oct. 23, 2006) (unpublished) [hereinafter Oct. 23 Board Order].

<sup>45</sup> Those telephone conferences were conducted on September 5, 2006, and October 3, 2006. See Tr. at 472; id. at 501.

<sup>46</sup> See NRC Staff's Brief in Response to the Licensing Board's Order of August 2, 2006 (Sept. 14, 2006); Exelon Generation Company, LLC, Brief in Response to the Board's August 2, 2006 Order Regarding Safety and Environmental Findings (Sept. 14, 2006).

<sup>47</sup> See 71 Fed. Reg. 59,135 (Oct. 6, 2006).

<sup>48</sup> See Prefiled Testimony of Thomas P. Mundy on Exelon Generation Company's ESP Application (Oct. 17, 2006); Prefiled Testimony of Tamar Jergensen Cerafici on Required Environmental Findings (Oct. 17, 2006); Prefiled Testimony of Eddie R. Grant on Required Safety Findings (Oct. 17, 2006); Staff's Prefiled Direct Testimony on Environmental Issues in the Clinton ESP Proceeding (Oct. 17, 2006) [hereinafter Staff Prefiled Environmental Testimony]; NRC Staff's Prefiled Direct Testimony on Health and Safety Issues in the Clinton ESP Proceeding (Oct. 17, 2006).

the submission of testimony and exhibits.<sup>49</sup> Thereafter, in accordance with the schedule set forth in the Board's October 2, 2006 Notice, an evidentiary hearing was held in Decatur, Illinois, on November 7 and 8, 2006. The hearing focused on the required determinations outlined in the Notice of Hearing and 10 C.F.R. § 2.104(b), as well as the parties' briefs, their prefiled testimony, and their responses to certain specific Board inquiries made at that hearing. During the hearing the Applicant and the Staff witnesses made presentations related to the Application and the Staff's review, and answered the Board's questions regarding their presentations and supporting exhibits. The Staff's health and safety and environmental presentations were accompanied by slide projections documenting the Staff's review and findings with respect to the FSER and FEIS, which were offered into evidence as Staff Exhs. 1 and 2, respectively.<sup>50</sup> The Applicant made its presentation to the Board in a similar manner, but included an additional presentation giving a brief overview of the ESP Application.<sup>51</sup>

1.23 The Board conducted a limited appearance session, as described in the October 2, 2006 Notice, in Clinton, Illinois, on the evening of November 8, 2006, during which approximately twenty individuals expressed their views regarding the proposed ESP through oral statements. Further, the Board and the NRC Hearing Docket received 19 written limited appearance statements.

1.24 Following the November 2006 hearing, the Board issued two orders, calling for supplemental briefing regarding issues that had arisen during the hearing and the limited

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<sup>49</sup> See Oct. 23 Board Order.

<sup>50</sup> See Staff Exh. 1, NRC Staff Health and Safety Presentation Slides (Nov. 7, 2006); Staff Exh. 2, NRC Staff Environmental Presentation Slides (Nov. 8, 2006).

<sup>51</sup> The Applicant offered three exhibits accompanying its presentations: EGC Exh. 1, Presentation: Overview of Exelon Early Site Permit Application, Thomas Mundy (Nov. 7, 2006); EGC Exh. 2, Presentation: Safety Assessment for Exelon Early Site Permit, Eddie Grant (Nov. 7, 2006); EGC Exh. 3, Presentation: Environmental Analysis for Exelon Early Site Permit, Tamar Cerafici (Nov. 7, 2006).

appearance session that were not addressed sufficiently at that time.<sup>52</sup> Additionally, the Applicant submitted proposed findings of fact and conclusions of law on November 28, 2006, and the Staff submitted its proposed findings of fact and conclusions of law on November 30, 2006.<sup>53</sup>

## II. ANALYSIS

2.1 The initial record of this proceeding<sup>54</sup> was supplemented by information provided by the Applicant and the Staff in (1) replies to the more than two hundred inquiries issued by this Board,<sup>55</sup> (2) briefs on the required safety and environmental findings the Board must make, (3) prefiled testimony regarding the Staff's review of the ESP Application and its findings, (4) presentations addressing those topics at the mandatory hearing, (5) the dialogue at the oral portion of this hearing addressing specific matters of concern to the Board, and finally (6) the replies to our post-oral-hearing orders. The following sections set out first the results of the Board's review with respect to the required safety findings, followed by the Board's review with respect to the required general environmental finding, the Board's review with respect to the

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<sup>52</sup> See Licensing Board Order (Directing Post-Hearing Supplemental Briefing) (Nov. 17, 2006) (unpublished) [hereinafter Nov. 17 Board Order]; Licensing Board Order (Directing NRC Staff Response to Hearing Issue) (Dec. 12, 2006) (unpublished) [hereinafter Dec. 12 Board Order].

<sup>53</sup> See Exelon Generation Company, LLC's Proposed Findings of Fact and Conclusions of Law (Nov. 28, 2006) [hereinafter Exelon's Proposed Findings]; NRC Staff's Proposed Findings of Fact and Conclusions of Law in the Mandatory Hearing (Nov. 30, 2006).

<sup>54</sup> The initial record included all documents submitted by the Applicant, the draft and final SER and EIS, the ACRS review letter and minutes of meetings, and the iterations between the Staff and the Applicant with respect to Requests for Additional Information.

<sup>55</sup> Eighty-eight inquiries were initially made regarding the FSER, followed by 64 inquiries seeking further explanations, and 62 specific inquiries regarding the FEIS. See July 20 Board Order attach. A; Aug. 17 Board Order attach. A; Sept. 6 Board Order attach. A.

three “baseline” NEPA determinations, and, finally, a brief discussion of some examples of issues that arose during the Board’s review and the resolution of those issues.

#### II.A. Board Review of the Staff’s Safety Review

2.2 As discussed above, with respect to safety matters, this Board is required to determine, without conducting a de novo review, “whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission’s staff has been adequate to support” license issuance.<sup>56</sup> While the Board indeed reviewed the principal documents in the record, we focused on those areas where our review of the FSER led us to believe that further exploration was necessary, areas where it was not clear that the Staff completely followed an established regulatory review process, and areas where the Staff’s logic was not clear. We did not, however, undertake any independent review of (or attempt to verify) technical results presented in the Application or in the Staff’s FSER. Instead, as directed by the Commission, we deferred to the NRC Staff’s underlying technical and factual findings in the absence of an indication that the Staff’s review was inadequate or its findings insufficient. Thus, as discussed above, we have interpreted our charge to be to determine whether the record enables us to conclude that the Staff had a reasonable basis for its conclusions, assuming that such a reasonable basis would be present where the Standard Review Plan (SRP) and applicable Regulatory Guides (or other guidance documents) were specifically followed,<sup>57</sup> and where the facts underlying its determinations were clear and its decision logically flowed from those facts and the applicable regulatory guidance. Where the SRP had not been followed, no specific Regulatory Guide was applicable, a Regulatory Guide required

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<sup>56</sup> 68 Fed. Reg. at 69,427.

<sup>57</sup> We note that neither regulatory guides nor standard review plans are legally binding, but our task here is to determine whether the Staff had a reasonable basis for its determinations, and such a basis is, in our view, clearly present when the Staff’s own internal and external guidance documents have been followed.

adaptation, or the Staff's logic was incomplete or unclear, the Board sought a thorough explanation of the Staff's rationale for the process it ultimately adopted along with its conclusions, and examined that process and those conclusions to ensure they were well-founded in fact and logic.<sup>58</sup>

2.3 The Board's review of the record led us to ask for specific clarification with regard to nearly 90 safety-related matters, all of which were addressed in written responses from the Staff and more than 60 of which required further exploration.<sup>59</sup> The net result was that only a limited number of matters were left for further exploration at the oral portion of this hearing, and those final discussions and explanations were factored into the Board's rulings set out below.

#### II.A.1. Board's Review of Staff Application of Regulatory Guidance

2.4 By identifying areas of the SRP that were precisely, prescriptively followed, because following that prescriptive process would be reasonable and logical for both the Staff and the Applicant, and by giving reasonable deference to Staff determinations (as the Commission has advised<sup>60</sup>) when that process was indeed followed, this Board was able, in the absence of obvious gaps in the logic of the Staff as set out in the record, to conclude for those areas that no further scrutiny would be required. In contrast, identification of those areas where there was (1) a deviation from a SRP or from the methodologies set out in an ordinarily prescribed regulatory guidance document, or (2) no applicable regulatory guidance document,

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<sup>58</sup> See April 17 Board Order at 3; Licensing Board Order (Reconsideration of April 17, 2006 order) (May 3, 2006) at 6 (unpublished); NRC Staff Response to Licensing Board's Order of August 2, 2006 (Aug. 18, 2006).

The Commission, in reviewing the Board's approach to departures from applicable SRPs, found that "it is reasonable for the Board to request information of this nature in order to help focus its review." CLI-06-20, 64 NRC at 23.

<sup>59</sup> See supra note 55.

<sup>60</sup> See CLI-05-17, 62 NRC at 34, 36.

required that we more closely scrutinize the factual underpinnings of the Staff's and the Applicant's documentation and their conclusions.

2.5 In performing its review of the Clinton ESP application, the Staff relied upon Review Standard (RS) RS-002, "Processing Applications for Early Site Permits," which sets forth guidance for the review of ESP applications and provides references to the applicable review criteria. The review criteria established for ESP applications in RS-002 are based on the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-0800.

2.6 By adhering as closely as possible to the relevant guidance and acceptance criteria of the SRP, the Staff utilized, for those areas, a reasonable and (where we were able to conclude that its logic was sufficiently explained) logical approach to reviewing the application.

#### II.A.2. Board's Review of Safety Matters Not Directly Addressed by Regulatory Guidance and Areas of Unclear Staff Logic

2.7 While 10 C.F.R. § 2.104(b)(2)(i) seemingly presents the Board with two safety related charges, the inquiries are not independent of each other: a finding that the facts in the record are sufficient to support the required determinations cannot be made if the Staff's review is inadequate to support that conclusion, because the relevant facts will not necessarily be set out in the record. Correspondingly, the record cannot inform the Board that the Staff's review was adequate if the facts in the record are insufficient to support those conclusions or if the Staff's logic in using those facts to reach its conclusion is not clearly or adequately explained. The Commission's interpretation of its regulations, to the effect that we are to examine the record to see if the Staff's conclusions are well-grounded in fact and logic, coupled with its directive to give deference to Staff factual determinations absent manifest error, guides us in interpreting the regulations' directive that our determinations are to be made without a de novo review. Unless the second part of the regulatory requirement (determining the adequacy of the

Staff's review) is to be rendered meaningless by a positive finding on the first part (facts in the record support affirmative decision), a result that is contrary to fundamental principles of regulation construction, this Board is required to seek out and determine whether the Staff's conclusions have adequate factual and logical underpinnings.

2.8 In examining the Staff's portion of the record, we found a plethora of instances where the Staff's conclusions could only be characterized as conclusory.<sup>61</sup> As a consequence, we initially issued, based upon our review of the Draft SER, an Order requiring the Staff to provide a thorough report detailing (among other things) how relevant guidance was applied, where the Staff deviated from that guidance, and where disagreements arose so that the Board could understand the factual underpinnings and logic of the Staff's conclusions.<sup>62</sup> After the Board denied portions of a Staff Motion to Reconsider,<sup>63</sup> the Staff appealed the Board's decision and the Commission ordered this Board to begin with a review of the record (including the FSER), because the "SER . . . should already explain [the Staff's] conclusions, logic, and underlying facts," and following such review, "tailor its request for additional information to those areas for which it needs additional information."<sup>64</sup>

2.9 During the pendency of that appeal, the Staff issued its FSER which we promptly began to review. While the FSER represented a material improvement over the Draft SER, it still failed, in a large number of instances, to logically connect facts to conclusions. In accordance with the Commission's ruling on the aforesaid appeal, the Board refined its request

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<sup>61</sup> See discussion infra Part II.C.

<sup>62</sup> See April 17 Board Order.

<sup>63</sup> See Licensing Board Order (Reconsideration of April 17, 2006 Order) (May 3, 2006) (unpublished); NRC Staff Motion for Reconsideration (April 27, 2006).

<sup>64</sup> CLI-06-20, 64 NRC at 23 (emphasis in original); see NRC Staff Petition for Interlocutory Review of the Licensing Board's May 3, 2006 Order (May 23, 2006).

for a narrative summary describing deviations from regulatory guidance documents and, instead, required a tabular list of all sections of the FSER wherein the applicable regulatory guidance documents were not expressly followed by the Applicant or the Staff, together with brief explanations of how the Staff addressed those deviations and its logic for its elected review process. The Staff identified a total of 10 such instances, occurring in matters discussed in Chapters 2, 11, 15, and 17 of the SER, and in each instance the Staff provided a description of the guidance that was not followed (i.e., the Regulatory Guide (RG) section, code section, Standard Review Plan Section, or RS Section), a description of the evaluation process it used in lieu of the identified guidance, and its rationale for using such a review process.<sup>65</sup>

2.10 While the Staff only identified ten instances where regulatory guidance was not prescriptively followed, there remained numerous instances where it failed to set out its logic leading from recited facts to recited conclusions. Thus, the Board focused further written inquiries on obtaining, from the Staff and the Applicant, the facts underpinning the Staff's determinations and the logic used by the Staff in analyzing those facts to reach its determinations. In addition to covering subject areas where the Staff had not followed the prescribed SRP and regulatory guide procedures, we inquired regarding many instances for which the Staff advised us that it had indeed followed the guides, but the Staff's logic and stated facts appeared inadequate to make the required determination that its "review was sufficient" to support the required findings. The Staff replies eventually supplied the vast majority of the missing information, and the inquiries and replies became part of the record of this proceeding, enabling this Board to reduce materially the information necessary to be covered at the oral part of this mandatory hearing.

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<sup>65</sup> See NRC Staff Response to Licensing Board's Order of August 2, 2006 (Aug. 18, 2006).

II.B. NEPA and other Environmental Related Matters

2.11 A Federal agency's obligation under NEPA to prepare an Environmental Impact Statement (EIS) is triggered when it undertakes a "major Federal action[] significantly affecting the quality of the human environment."<sup>66</sup> The Commission, having determined that the issuance of an Early Site Permit is a "major Federal action significantly affecting the quality of the human environment," promulgated 10 C.F.R. § 52.18, requiring the Staff to prepare an EIS during its review of any application for an ESP.

2.12 To assist the Board in comprehending the scope and significance of the Federal action that would be undertaken by issuance of the requested Early Site Permit, in our October 23, 2006 Order we requested that the Parties deliver a concise statement of precisely what actions would be permitted if the requested ESP were granted.<sup>67</sup> The Applicant and the Staff responded at the hearing with Joint Exhibit 1.<sup>68</sup> This exhibit describes the general scope of an ESP permit and precisely what is permitted pursuant to 10 C.F.R. § 50.10(e). Joint Exhibit 1 also sets forth the views of the Applicant and the Staff regarding the tasks and information a holder of this proposed ESP would not be required to undertake or produce as a future COL applicant, and called to the Board's attention those items that would require additional information, as specified in the ESP Conditions in FSER app. A and FEIS § 4.3.1, the COL Action Items in FSER app. A, and other unresolved issues listed in the FEIS, along with other

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<sup>66</sup> NEPA Section 102(2)(C), 42 U.S.C. § 4332(2)(C).

<sup>67</sup> See Oct. 23 Board Order at 2.

<sup>68</sup> Joint Exh. 1, NRC Staff's and Applicant's Joint Response to Request for Information on Activities Permitted by the Early Site Permit (ESP) (Nov. 7, 2006).

issues not addressed at the ESP stage, such as need for power, final cost-benefit analysis, and a complete and integrated emergency plan.<sup>69</sup>

2.13 10 C.F.R. § 51.105(a)(4) requires the Board, as a general matter, to determine “whether the NEPA review conducted by the NRC Staff has been adequate.” To assess the Staff’s NEPA review the Board looked first to the overarching goals of NEPA, requiring the Staff to take a “hard look” at the Applicant’s environmental findings and ensure that NEPA’s goals of public disclosure, identification of potential adverse environmental impacts, and consideration of reasonable alternatives have been satisfied. The Board’s review of the adequacy of the Staff’s NEPA review followed a similar course to that of our review of the safety-related matters described above, *i.e.*, we reviewed the Staff’s facts and process to enable us to comprehend and evaluate the logic employed, and then focused our review on those areas with shortcomings.

2.14 The Board’s final assessment of the adequacy of the Staff’s NEPA review is in large part guided by the Commission’s regulations, which establish certain procedural requirements for the Staff’s review and set out the specific baseline NEPA determinations required in this proceeding. Our resolution of the specific baseline determinations is discussed below.

#### II.B.1. “Baseline” NEPA Determinations

2.15 In addition to the general NEPA compliance portion of our review, 10 C.F.R. § 51.105(a) requires this Board, with respect to certain NEPA issues, to:

- (i) Determine whether the requirements of section 102(2)(A), (C), and (E) of the National Environmental Policy Act and then regulations in this subpart of this chapter [subpart A of part 51] have been met;

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<sup>69</sup> See id.

- (ii) Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; and
- (iii) Determine, after weighing the environmental, economic, technical and other benefits against environmental and other costs, and considering reasonable alternatives, whether the construction permit should be issued, denied, or appropriately conditioned to protect environmental values.<sup>70</sup>

The Commission directed, in this regard, that “licensing boards must reach their own independent determination on uncontested NEPA ‘baseline’ questions — i.e., whether the NEPA process ‘has been complied with,’ what is the appropriate ‘final balance among conflicting factors,’ and whether the ‘construction permit should be issued, denied or appropriately conditioned.’”<sup>71</sup> In reaching these independent determinations, however, “boards should not second-guess underlying technical or factual findings by the NRC Staff,” and “[t]he only exceptions to this would be if the reviewing board found the Staff review to be incomplete or the Staff findings to be insufficiently explained in the record.”<sup>72</sup> In examining the requirement, and establishing a standard, for this Board’s NEPA-related review, the United States Court of Appeals for the District of Columbia Circuit stated that “[p]erhaps the greatest importance of NEPA is to require the [Commission] and other agencies to consider environmental issues just as they consider other matters within their mandate.”<sup>73</sup> Thus, the

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<sup>70</sup> The Commission’s Notice of Hearing, and the provisions of 10 C.F.R. § 2.104(b)(3) shorthand this provision as “determine whether the construction permit should be issued, denied, or appropriately conditioned to protect environmental values,” supporting the Board’s interpretation (*see supra* note 40) that the requirement to “independently consider” the matters set out in 10 C.F.R. §§ 51.105(a)(2) and 2.104 (b)(3)(ii) is purely to identify what matters are to be considered in reaching the determination specified in § 51.105(a)(3).

<sup>71</sup> CLI-05-17, 62 NRC at 45 (quoting 10 C.F.R. § 2.104(b)(3)).

<sup>72</sup> *Id.*

<sup>73</sup> Calvert Cliffs’ Coordinating Comm., Inc. v. AEC, 449 F.2d 1109, 1112 (D.C. Cir. (continued...))

D.C. Circuit has determined that the NRC must not apply a lesser standard for its environmental review than it applies for its safety review. The Board's determinations with respect to these NEPA-related issues were made employing the same review standards we used for safety-related issues, and are set forth below.

2.16 The applicable NRC regulatory criteria and review standards for the evaluation of an ESP applicant's Environmental Report (ER) are outlined in 10 C.F.R. § 52.18, and the environmental regulatory framework is further set out in 10 C.F.R. Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," (§§ 51.45, 51.50, 51.71, and 51.75). As with the NRC Staff's review of the safety aspects of an ESP, RS-002, "Processing Applications for Early Site Permits," provides the general review standards for the Staff's environmental review, while referencing and relying upon NUREG-1555, "Standard Review Plan for Environmental Reviews of Nuclear Power Plants." These regulations, review standards, and regulatory guides provided the Board with a framework for assessing the Staff's review of the ESP application as well as a framework for the Board to make the three specific required NEPA findings.

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<sup>73</sup>(...continued)

1971). "The Commission's regulations provide that in an uncontested proceeding the hearing board shall on its own determine whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission's regulatory staff has been adequate, to support affirmative findings on various nonenvironmental factors. NEPA requires at least as much automatic consideration of environmental factors. In uncontested hearings, the board need not necessarily go over the same ground covered in the detailed [environmental impact] statement. But it must at least examine the statement carefully to determine whether the review . . . by the Commission's regulatory staff has been adequate. And it must independently consider the final balance among conflicting factors that is struck in the staff's recommendation." *Id.* at 1118 (emphasis added, footnote and internal quotation marks omitted).

II.B.2. Compliance With Sections 102(2) (A), (C), and (E) of NEPA and Subpart A of 10 C.F.R. Part 51

2.17 As noted above, 10 C.F.R. Part 51 mandates certain review requirements related to an EIS for a construction permit, including an ESP. Many of these requirements are procedural and cover, among other things, the notice and distribution for public comment of the EIS, responses to public comment, and distribution of the final EIS.<sup>74</sup> Further, Part 51 contains substantive requirements setting forth mandatory elements of the EIS, which include a description of the purpose of and need for the action, alternatives, the affected environment, environmental consequences and mitigating actions, and substantive comments received during the public comment period as well as NRC responses.<sup>75</sup> The relevant portions of the record of this proceeding, in particular the FEIS and its appendices, demonstrate that the Staff has complied with both the procedural and substantive requirements of 10 C.F.R. Part 51.<sup>76</sup>

2.18 Section 102(2)(A) of NEPA requires all federal agencies to “utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man’s environment.”<sup>77</sup> The FEIS and other elements of the record of this proceeding (including the responses to our numerous inquiries and the information presented at the oral portion of this hearing and in writing subsequent thereto), demonstrate that the Staff utilized a systematic, interdisciplinary approach integrating their use of the natural and social sciences in

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<sup>74</sup> See 10 C.F.R. §§ 51.28, 51.29, 51.73, 51.74, 51.91, 51.93, 51.117.

<sup>75</sup> See 10 C.F.R. §§ 51.70, 51.71, 51.75.

<sup>76</sup> Federal Register Notices announcing and providing the public information regarding the draft EIS and final EIS for the Clinton ESP application as well as opportunities for public comment can be found at 68 Fed. Reg. 66,130 (Nov. 25, 2003); 70 Fed. Reg. 12,022 (Mar. 10, 2005); 71 Fed. Reg. 42,884 (July 28, 2006).

<sup>77</sup> 42 U.S.C. § 4332(2)(A).

their decision-making regarding environmental impacts as required under NEPA. The Staff's review considered the following subjects and impacts: the purpose and need for the proposed ESP; public and worker health; the need for the facility; the alternatives to the proposed action; compliance with the applicable regulations; meteorology and air quality; geology; the radiological environment; water resources and water use; local ecology; socioeconomics; aesthetics; cultural resources; environmental justice; threatened and endangered species; transportation; noise; land use; public worker health; accidents; waste management and fuel cycle impacts; decommissioning; cumulative impacts; and resource commitments.<sup>78</sup> The record of this proceeding, in particular the FEIS and the Staff's presentations, demonstrate the Staff's utilization of the expertise of professional scientists, engineers, and social scientists in conducting its review, indicating a systematic, interdisciplinary approach and integrating the use of the natural and social sciences.<sup>79</sup>

2.19 Section 102(2)(C) of NEPA requires a Federal agency to address in its environmental impact statement: (1) the environmental impact of the proposed action; (2) any adverse environmental effects which cannot be avoided should the proposal be implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. 42 U.S.C. § 4332(2)(C). The record of this proceeding, in particular the FEIS and the testimony and exhibits proffered by the Staff, demonstrate that the Staff has complied with these requirements in performing its environmental review. In particular, the Staff examined the potential impacts associated with

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<sup>78</sup> See FEIS at v to xviii; Staff Prefiled Environmental Testimony at 94.

<sup>79</sup> See FEIS at apps. A & B; Staff Prefiled Environmental Testimony at 94-95.

the construction, operation, and decommissioning of a reactor(s) having characteristics that fall within the parameters of the site in: FEIS Chapter 4 (Construction Impacts); Chapter 5 (Operational Impacts); Chapter 6 (Impacts of Fuel Cycle, Transportation, and Decommissioning); and Chapter 7 (Cumulative Impacts). Unavoidable adverse impacts are addressed by the Staff in Chapter 10.1 of the FEIS, while Chapters 1, 8, and 9 of the FEIS address reasonable alternatives, including the no-action alternative. Finally, Chapter 10 of the FEIS addressed both the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources that might result from the proposed action.

2.20 NEPA Section 102(2)(C) also requires that an agency "consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved." 42 U.S.C. § 4332(2)(C). The record of this proceeding, in particular the Appendices to the FEIS, demonstrates that the Staff has complied with this requirement. Appendix B of the FEIS details each agency or person consulted for purposes of the Staff's review. Appendix D of the FEIS includes public comments received by the Staff at its scoping meeting, and Appendix E contains public comments responding to the Staff's Draft Environmental Impact Statement.

2.21 Finally, Section 102(2)(E) of NEPA requires a federal agency to "study, develop, and describe appropriate alternatives to the recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(2)(E). At the ESP stage, NRC regulations expressly excuse an applicant from examination, in its environmental report, of the benefits of the proposed project, e.g., the need for power, or analysis regarding energy alternatives, and provide that the relevant regulations "may not be construed to require that . . . the draft or final environmental impact statement

include an assessment of the benefits of the proposed action.”<sup>80</sup> These matters are to be addressed at the CP or COL application stage.<sup>81</sup> The Exelon environmental report included an assessment of energy alternatives, and Chapter 8 of the FEIS sets out the NRC review regarding energy alternatives, plant design alternatives, alternative sites and the no action alternative. The FEIS and the parties briefings and testimony on this matter demonstrate that the Staff has met its obligations under NEPA with respect to consideration of alternatives.

### II.B.3. Independent Consideration of the Final Balance Among Conflicting Factors

2.22 In Chapters 8 and 9 of the FEIS, the Staff outlines its evaluation of energy alternatives, plant design alternatives, the alternative site selection process, and six alternative sites. Since an analysis of the need for power from the ESP facility and a final cost-benefit balance is not required for the issuance of an ESP, this Board’s balancing review relates to the selection of the Clinton ESP site vis-a-vis other potential sites.<sup>82</sup> Chapter 9 of the FEIS sets forth the Staff’s review of certain alternative sites, its evaluation of the likely environmental impacts of construction and operation at these sites, and its ultimate comparison among those alternatives, leading to the conclusion that selection of the proposed site is appropriate.<sup>83</sup> The Board’s independent consideration of the FEIS and the record in this proceeding indicates that the information and evaluation prepared by the Staff is reasonable and reasonably supports the

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<sup>80</sup> 10 C.F.R. § 52.21.

<sup>81</sup> See Aug. 2, 2006 Order. The Board explained that “[w]ith regard to the final NEPA determination, the regulations make clear that at the ESP stage a discussion of the benefits, including need for power, is not necessary. See 10 C.F.R. § 52.17(a)(2). Further, the Commission has made clear that ‘the board’s reasonable alternatives responsibilities are limited’ and focus on the consideration and comparison of alternative sites only.” Id. at 5 n.14 (quoting CLI-05-17, 62 NRC at 48).

<sup>82</sup> See 10 C.F.R. § 52.17(a)(2); CLI-05-17, 62 NRC at 48.

<sup>83</sup> See FEIS at 9-2 to -9.

Staff's judgment (with which this Board agrees) that none of the alternative sites identified is environmentally preferable or obviously superior to the proposed Clinton ESP site.<sup>84</sup>

#### II.B.4. Ultimate Determination vis-a-vis NEPA Regarding ESP Issuance

2.23 The Board has undertaken (without substituting its judgment for that of the Staff regarding its specific technical and factual findings, and instead relying upon the Staff's technical expertise absent manifest error) an independent review of the Clinton ESP application with respect to the three NEPA "baseline" questions. We find nothing illogical about the Staff's approach, and nothing to indicate that the facts in the record do not support the Staff's conclusions with respect to environmental matters. Further, we find nothing to indicate that the review conducted by the Staff pursuant to NEPA has been inadequate or that the facts in the record do not support the Staff's conclusions with respect to environmental matters. Based upon our review of the FEIS and the record of this proceeding, and subject to the qualifications set out in Part III of this Decision, the Board agrees with the Staff that, after considering the reasonable alternatives as described above, the ESP should be issued, subject to the Permit Conditions, COL Action Items, and those items listed in the record as requiring further action or follow-up at the COL stage.<sup>85</sup> Notwithstanding the foregoing findings, none of the aforesaid Permit Conditions, COL Action Items, or items listed as requiring further action or follow-up shall be treated as "resolved" for the purposes of 10 C.F.R. § 52.39(a)(2).

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<sup>84</sup> See id. at 9-8, 9-9.

<sup>85</sup> See NRC Staff Responses to the Board's Inquiries Concerning the Staff's Final Environmental Impact Statement, attach. A (Sept. 29, 2006) at 3-5; see also FEIS app. K. In response to a Board inquiry regarding issues and facts to be resolved or confirmed at the COL stage, the Staff directed the Board to Appendix K of the FEIS, and described those matters which were not considered by the Staff at the ESP stage but will be subject to review and verification by the Staff at the COL stage.

II.C. Selected Examples and Considerations

2.24 The following selected examples illustrate (1) the nature of issues confronting this Board where portions of the FSER or the FEIS failed to provide a clear picture of the Staff's logic and/or of its review of the Applicant's statements, and (2) the process employed by this Board for review (and resolution) of its concerns.

II.C.1. Selected Examples of Unclear Logic in the FSER

2.25 In Section 15.3.1 of the FSER, "Selection of [Design Basis Accidents] DBAs," the Staff concluded that the AP1000 and ABWR source terms bound the source terms for all reactors included in the PPE. The Applicant, as would be expected at this stage, has not chosen a reactor design, and, accordingly, has performed its analysis using the PPE values, or other surrogate source characteristics. In selecting its DBAs, the Applicant primarily relied on the source terms from the proposed AP1000 and certified ABWR Design Control Documents (DCD), however, it also examined and considered possible DBAs from other reactor types.<sup>86</sup> The Staff, in reviewing the Applicant's DBA selection, noted that "[t]he applicant stated that the DBAs analyzed in the proposed AP1000 and certified ABWR DCDs are expected to bound the DBAs of the other reactors being considered for the proposed ESP site," and then simply concluded, "[w]hile it has not reviewed the designs other than the ABWR and AP1000 in detail, the staff believes that any conclusions drawn regarding the site's acceptability based on the AP1000 and ABWR designs are likely to be valid for the other reactor designs the applicant is considering."<sup>87</sup>

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<sup>86</sup> See Tr. at 647-56; FSER at 15-1.

<sup>87</sup> FSER at 15-5.

2.26 The Board, finding the Staff's logic in the FSER insufficient to explain its conclusory findings, pursued the topic in one of its many FSER written inquiries.<sup>88</sup> The Staff's response provided a similar answer to that set out in the FSER, simply stating that "any conclusions drawn regarding the site's acceptability based on the AP1000 and ABWR designs are likely to be valid for the other reactor designs."<sup>89</sup> Still perplexed, the Board pursued the matter further at the oral hearing.<sup>90</sup> While the Board was never presented with a clear description of the Staff's logic for accepting the significant and substantial proposition that the consequences of DBAs in AP1000 and ABWR designs would bound those of other possible reactor designs, we find that this deficiency is not fatal because of required further review to be performed at the CP or COL stage. The Staff has advised that if a reactor other than the AP1000 or ABWR is selected by the Applicant, its source term characteristics will be reviewed by the Staff at the COL or CP application stage to ensure that the impacts of such designs are in fact bounded by the DBA analyses performed for this ESP.<sup>91</sup>

2.27 An example of lack of clarity is found in Section 2.4.1.3 of the FSER stating:

In response to RAI 2.4.1-1, the applicant stated that it expects the horizontal clearance between the existing CPS piping and the new ESP facility piping to be 50 ft. The staff determined that this proposed horizontal clearance is acceptable.<sup>92</sup>

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<sup>88</sup> See July 20 Board Order attach. A at 9.

<sup>89</sup> NRC Staff Response to Licensing Board's Order of July 20, 2006, Requiring Answers to Inquiries and the Provision of Documents (July 31, 2006) attach. A at 26 [hereinafter Staff Response to July 20 Board Order].

<sup>90</sup> See Tr. at 647-656, 664-665, 685-696.

<sup>91</sup> FSER at 15-5.

<sup>92</sup> Id. at 2-66

On its face, this statement by the Staff suggests, without explanation and without analyses, that it accepted the Applicant's statements on their face; however, after this broad statement the Staff explained that review of the Applicant's proposed horizontal clearance is the subject of a COL Action Item and is therefore the subject of forthcoming review (i.e., it has not, in fact, found "this proposed clearance acceptable").<sup>93</sup> The opening language hardly conveyed this message, rather it seems to suggest that the Staff had finished its review and "accept[ed]" the Applicant's statements.

2.28 In other instances, the Board's concerns regarding conclusory statements in the FSER were not as simply relieved. Describing the population distribution data provided by the Applicant, the FSER states that "the applicant estimated and provided the population distribution within a 50-mile radius of the proposed ESP site, based on the most recent U.S. Census data, and the projected population estimates up to 2060, including transient populations."<sup>94</sup> Subsequently, in its description of the Staff's technical evaluation, the FSER states that the "the staff finds that the applicant's projected data cover an appropriate number of years and are therefore reasonable."<sup>95</sup> Leading up to this assessment the Staff explains that it "compared and verified the applicant's population data against U.S. Census Bureau internet data" – data that is historical only.<sup>96</sup> There is, however, no discussion of the Staff's analysis of the accuracy of the Applicant's method for making its population projections, or comparisons with other projections.

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<sup>93</sup> See id.

<sup>94</sup> Id. at 2-7

<sup>95</sup> Id. at 2-9

<sup>96</sup> Id.

2.29 After written questioning by the Board, the Staff explained its review by describing the method employed by the Applicant to estimate the population change through 2060 and the Applicant's use of an Illinois State University study for population projections based on 1990 census data.<sup>97</sup> The Staff explained that Illinois State University projected for the years 2000, 2010, and 2020, and that the Applicant took those projections and used a linear analysis to project the population out to years 2030, 2040, 2050, and 2060. The only deviation by the Applicant from the Illinois State University's study was the use of actual data for the year 2000 as opposed to the estimates used by the Illinois State University in its study.<sup>98</sup> This response, however, provided no insight into the Staff's logic for its conclusion that the Applicant's analyses were acceptable. Therefore, the Board pursued this matter through follow-up written inquiries, questioning at the hearing, and in a post-hearing order, in which the Board asked the Staff to address more recent population data and projections.<sup>99</sup>

2.30 Through its responses to the Board's written and oral inquiries and its analysis with respect to the more recent projections by Illinois Department of Commerce and Economic Opportunity,<sup>100</sup> the Staff eventually explained to the Board that even adopting the more recent population data and projections, the population density still fell below the thresholds specified in

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<sup>97</sup> See July 20 Board Order attach. A at 1; Staff Response to July 20 Board Order attach. A at 1; Staff Response to July 20 Board Order attach. A at 1-2.

<sup>98</sup> See Tr. at 591-94.

<sup>99</sup> See Aug. 17 Board Order at 9-10; Tr. at 590-603; Nov. 17 Board Order.

<sup>100</sup> Responding to the Board's November 17, 2006 Order the Staff stated that it "had determined in the FSER that population densities for the proposed site would be well below 500 persons per square mile averaged over any radial distance out to 20 miles. The re-evaluated population densities based on the new IDCEO data for years 2000, 2010, 2020, and 2030 over radial distances out to 20 miles. They were 116, 123, 132, and 138 persons per square mile for years 2000, 2010, 2020, and 2030, respectively, and were still well below the population density criterion specified in RG 4.7." NRC Staff's Response to Licensing Board's November 17, 2006 Order (Dec. 4, 2006) at 2.

the applicable regulatory guide. In addition, the Staff noted that if actual population growth deviates materially from those projections, new analyses will be required.<sup>101</sup>

2.31 In fact, the results of our inquiries advise us that the data could be in error by a factor of two or more and still be such that the population per square mile would fall far below the 500 persons per square mile criterion in Regulatory Position C.4 of Regulatory Guide (RG) 4.7, "General Site Suitability Criteria for Nuclear Power Station."<sup>102</sup> Thus, we infer that the Staff's assessment rested primarily upon the lack of impact that changes in the data would have on the Staff's conclusions, even if population projections had been materially in error; all parties would have benefitted if the Staff had simply so stated from the outset.

#### II.C.2. Instances of Non-verification of Facts Asserted by the Applicant

2.32 In addition to our concern regarding the lack of a clear logic flowing from the facts recited in the FSER to the conclusions the Staff reached, we observed a large number of instances wherein the Staff appeared to simply accept, without checking or verifying, the facts stated by the Applicant. This led to a number of our early inquiries regarding safety matters, probing the Staff's process for verifying facts relied upon during its review. The Staff replied that some facts are taken by the Staff to be true on the basis that they are in the nature of an affirmation or declaration under oath by the Applicant.<sup>103</sup> This approach stands in stark contrast

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<sup>101</sup> See id. at 3.

<sup>102</sup> The RG specifies that if the population density in the vicinity of the proposed site projected at the time of initial site approval and within 5 years thereafter were to exceed 500 persons per square mile averaged over any radial distance out to 20 miles, alternative sites should be considered. In the Staff's response to the Board Order following the hearing, the Staff re-evaluated population densities based on data from the Illinois Department of Commerce and found in all cases the estimates were still well below the 500 persons per square mile. See id.

<sup>103</sup> See Staff Response to Board Order of August 17, 2006: Response to Amended Inquiry 88 (Aug. 31, 2006) [hereinafter Staff Response to Aug. 17 Board Order] (where the Staff affirmed that it accepted, without verification, facts submitted by the Applicant in, e.g.,  
(continued...))

to the Staff's approach to facts underlying its assessment of environmental matters, where the Staff checked underlying facts, presumably because our regulations require the Staff to "independently evaluate and be responsible for the reliability of any information which it uses" in complying with its NEPA obligations.<sup>104</sup> It also stands in stark contrast to certain portions of the Staff's safety review, most notably its review of the Applicant's proposed alternative method for estimating the seismic hazard at the proposed site in Section 2.5.2.3.6 of the FSER, in which the Staff had a contractor perform an in-depth review of the Applicant's methodology that resulted in the FSER incorporation of a derivation of the equations used in that methodology.

2.33 Notwithstanding these clear inconsistencies, we find ourselves compelled by Commission rulings and policy statements to accept this approach by the Staff because the Commission has advised that their "longstanding practice . . . grounded in sound policy" is to "leave[] to the expert NRC technical staff prime responsibility for technical fact finding on uncontested matters."<sup>105</sup> Consequently we are directed to give deference to the Staff's technical expertise and findings.<sup>106</sup> Further, the Commission has advised that "boards should not second-guess underlying technical or factual findings by the NRC Staff" with the only exceptions being where "the reviewing board found the Staff review to be incomplete or the

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<sup>103</sup>(...continued)

FSER Sections 2.4.1.1, 2.4.2.1, 2.4.3.1, 2.4.4.1, 2.4.7.1, 2.4.8.1); see infra note 108, indicating more than 100 such instances.

<sup>104</sup> 10 C.F.R. §§ 51.41, 51.70(b). In this regard, we note the United States Court of Appeals for the District of Columbia Circuit's holding in Calvert Cliffs, 449 F.2d 1109, (see supra note 73) that the NRC must apply no lesser standard to its environmental review than it does to its safety review, and suggest that the inverse principle is equally important to follow.

<sup>105</sup> CLI-05-17, 62 NRC at 35.

<sup>106</sup> See id. at 34.

Staff findings to be insufficiently explained in the record.”<sup>107</sup> Therefore, in these instances, where the Staff has provided an explanation rooted in an established and, in the context of the relatively simple safety matters at issue in this ESP proceeding, not-unreasonable basis for accepting the Applicant’s facts without checking them,<sup>108</sup> we accept the Staff’s factual findings as conforming with the Commission’s instructions. Nonetheless, our confidence in the Staff’s judgment would have been materially improved had the more important of those facts been checked. When it comes, however, to a construction permit application, or a combined license application, which may require complex transient, accident, and other detailed safety analyses, in every instance performed with computer codes used to simulate the plant’s behavior, we would find such an approach regarding the assumptions underlying the models incorporated into those codes and input data used for the analyses extremely troubling. The results of any such analyses are completely driven by those assumptions, the models, and the input data, and cannot be relied upon without thorough examination of the assumptions and limitations of the models and careful consideration of the input data.

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<sup>107</sup> Id. at 45.

<sup>108</sup> More than 110 such instances were detailed in an 83 page response by the Staff to the August 17 Board Order directing the Staff to deliver, with respect only to Sections 2.4, 2.5, 13.3.1 and 13.3.3.11 of the FSER, “a table indicating each fact or technical conclusion referred to in a subsection of the FSER entitled ‘Technical Information in the Application’ which was not expressly referred to in the succeeding subsection entitled ‘Technical Evaluation’ and explaining (a) whether or not that fact or technical conclusion was verified, and, if not, why not, and (b) how, if at all, that fact or conclusion undergirds (and the role that fact plays in the logic of) the Staff’s conclusion regarding the matter subject of that subsection. To the extent that such fact(s) or conclusion(s) play no such role, Staff may so indicate . . . .” August 17 Board Order at 6. A few examples include non-verification of: (i) the precise location of the Clinton dam because it “did not have an effect on Staff’s evaluation on the SER”; (ii) the statement that the design water level in the Ultimate heat Sink is 675 ft MSL because the “Staff relied upon the Applicant’s assertion in the SAR [and] . . . this fact was used to determine the effects of an ice sheet formation in Clinton Lake on the proposed intake structure of the ESP facility”; and (iii) the statement that the estimated annual sedimentation amount for the Clinton Lake is 5 ac-ft, noting that the information “was used in the Staff’s determination . . . [and was] the basis to assess if adequate cooling water was available.” Staff Response to Aug. 17 Board Order.

### II.C.3. An Example Regarding the Staff's NEPA Review

2.34 After its initial review of the FEIS, the Board was troubled by the Staff's differing treatment of internally versus externally initiated severe accident events. Potential environmental consequences of severe accidents are discussed in Section 5.10.2 of the FEIS, where it is stated that "only [those] risks associated with internally initiated events are presented in Table 5-13."<sup>109</sup> Probing the logic of this decision, the Board, in a written inquiry, questioned the Staff's decision to include only risks from internally initiated events.<sup>110</sup>

2.35 In response, the Staff referred to NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," in which both internal and external initiating events were analyzed for two of the five plants studied in that report. The Staff stated that "[m]ost of the [external] events examined were assessed to be insignificant contributors by means of bounding analyses. However, seismic events and fires were found to be potentially major contributors for Surry and Peach Bottom."<sup>111</sup> The Staff further stated that "[t]he risks calculated for ABWR and AP1000 reactor designs at the Exelon ESP site are well within the Commission's safety goals," and "[i]f external events had been considered and had they doubled or tripled the risk, the risk would still be well within the safety goals."<sup>112</sup>

2.36 This Board found the Staff's response unilluminating, noting that: (a) the suggestion that most of the events examined were insignificant is vague; (b) the term "bounding analyses" was not defined; (c) the reference to seismic events and fires for the two specifically

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<sup>109</sup> FEIS at 5-69.

<sup>110</sup> See Sept. 6 Board Order attach. A at 4.

<sup>111</sup> NRC Staff's Responses to the Board's Inquiries Concerning the Staff's [FEIS] (Sept. 29, 2006) at 24. The Staff also stated that "[s]ubsequent severe accident analyses related to license renewal have focused on internal initiating events. The same approach has been followed for the early site permit environmental reviews." Id.

<sup>112</sup> Id.

referenced plants was not related to the ESP; and (d) no basis was supplied for the statement that if external events had been considered and had they doubled or tripled the risk, the risk would have remained well within the safety goals. Therefore, in its October 23, 2006 Order the Board directed the parties to be prepared to pursue the matter further at the oral hearing.<sup>113</sup>

2.37 At the hearing, two witnesses, one for the Applicant<sup>114</sup> and one for the Staff,<sup>115</sup> addressed the matter. The role of probabilistic risk assessment and the use of a factor of two or three for multiplying the internally initiated risk in order to account for the effect of external events were explained. We found this discussion to be sufficient and consider the question to be closed, but we note that a Board inquiry would not have been necessary if Staff had explained its logic from the outset by incorporating into the FEIS the relevant information ultimately presented at the hearing.

#### II.C.4. Logic Behind Hydrology Permit Conditions

2.38 Finally, we are concerned about the Staff's replies to discussion at the oral hearing regarding modification of Permit Condition 3 (requiring hydraulic gradients to be towards radwaste facilities) to include piping as well as surface and subsurface conditions, to which the Applicant responded it "would have no problem expanding that permit condition to include other piping leading into the radwaste building or other buildings with the liquid radwaste."<sup>116</sup>

2.39 Having not resolved that concern at the oral hearing, the Board directed the Staff and Applicant to consult and address the issue. In its Proposed Findings of Fact and

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<sup>113</sup> See Oct. 23 Board Order at 2.

<sup>114</sup> See Tr. at 773-8.

<sup>115</sup> See id. at 875-9.

<sup>116</sup> Id. at 733.

Conclusions of Law, the Applicant reported that it had consulted with the Staff regarding an additional permit condition for liquid radwaste in other structures, systems, and components (“SSCs”), but the Staff responded that it did not support any further permit condition.<sup>117</sup>

Seeking clarification, the Board issued an order on December 12, 2006, requesting that the Staff provide an explanation of its position.<sup>118</sup> The Staff replied, in substance, that Permit Condition 4 to the FSER (requiring incorporation of “features to preclude any and all accidental releases of radio-nuclides into any potential liquid pathway”<sup>119</sup>) “addresses th[ose] concerns.”<sup>120</sup>

2.40 We are concerned that the absolute obligation created by Permit Condition 4<sup>121</sup> is unachievable as a practical matter and, therefore, may be unenforceable as a legal matter,<sup>122</sup> whereas the proposed modification of Permit Condition 3 would not create such a situation. Thus, we find that Permit Condition 3 should be expanded to include, as Applicant has agreed, “piping leading into the radwaste building or other buildings [containing] liquid radwaste.”<sup>123</sup>

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<sup>117</sup> See Exelon’s Proposed Findings at 14.

<sup>118</sup> See Dec. 12 Board Order.

<sup>119</sup> FSER at A-3 (emphasis added).

<sup>120</sup> NRC Staff’s Response to the Board’s December 12, 2006 Order (Dec. 14, 2006) at 2.

<sup>121</sup> This same permit condition is present in the FSER for Grand Gulf and was the subject of extended discussions between the Staff and the Grand Gulf Licensing Board at its oral hearing. See NUREG-1840, “Safety Evaluation Report for an Early Site Permit (ESP) at the Grand Gulf Site,” at app. A.2; Grand Gulf Early Site Permit Hearing Transcript (Nov. 29, 2006) at 228-62, ADAMS Accession No. ML063450140.

<sup>122</sup> Such a Permit Condition is akin to a requirement that the plant design preclude any and all accidents that might release radioactivity, and is unachievable as a practical matter, violates the entire foundation of consideration of “design basis accidents,” and is contrary to the principles of risk-informed regulation toward which the Commission has turned.

<sup>123</sup> Tr. at 733.

II.D. Completeness of COL Action Items and Open Items

2.41 Another aspect of the Staff's review process that the Board found to be illogical was the multifaceted approach, in the FSER and FEIS, to documenting issues that remained unresolved or open after the completion of the Staff's review of the ESP. The Staff expressly documents Permit Conditions (tabulated in Appendix A.1 of the FSER and a single environmental permit condition in Section 4.3.1 of the FEIS) and COL Action Items (tabulated in Appendix A.2 of the FSER). However, throughout both the FSER and FEIS the Staff identifies numerous items that are incomplete, not addressed, or remain open until submittal of a complete COL. These latter items were the subject of a series of inquiries to the Staff.<sup>124</sup>

2.42 In response to our inquiries at the hearing, the Staff stated that they "will use the information in the early site permit in [their] safety evaluation at the COL stage,"<sup>125</sup> and, in fact, acknowledged that both the Applicant and the Staff will have to go page-by-page through the SER and the EIS at the CP or COL stage to identify those items that still need to be addressed.<sup>126</sup> Considering that an ESP is valid for 20 years, this approach places a considerable and unnecessary burden on all participants and could lead to considerable confusion regarding what has indeed been resolved when and if a CP or COL is eventually submitted. The Board is at a loss to understand why, as a matter of practice, such items are not listed in an exhaustive list in the FSER or in a database for future reviewers, so as to ensure that all unresolved items are addressed through the use of proper configuration control of the permit. The Board, therefore, asked the Staff to supplement the FSER with a table listing all instances wherein "issues that have not been documented as COL action items, but have,

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<sup>124</sup> See July 20 Board Order attach. A at 1, 2, 3, 9; Aug. 17 Board Order at 6-7, 11.

<sup>125</sup> Tr. at 731.

<sup>126</sup> See id.

nonetheless, been found to need additional review and evaluation at the COL stage.”<sup>127</sup> The Staff provided the Board with such a table, which the Board hereby incorporates into the Staff’s review documents.<sup>128</sup>

II.E. General Observations Regarding the Process

2.43 We close this portion of our Order with a few observations for the Commission, in whose shoes we have stood as we performed this review of the record and the Staff’s work.

2.44 First, we found a wide variation in the depth of detail and the level of inclusion of logic from subsection-to-subsection in the FSER, with some subsections providing nothing more than rote recitation of the language prescribed by the SRP and others going into substantial detail regarding underlying facts, explaining logic and reaching conclusions based thereupon. This variation was disturbing to us for two primary reasons: (a) in the former instances, we could not determine what, if any, logic was used by the Staff reviewer when performing his/her task; and (b) it implied that there was, at the least, a lack of coordination among the reviewers, and at the worst, a lack of supervision over the product/project. These concerns, absent the Commission mandated deference to the Staff’s judgment, might well have been the source of a much more probing review, particularly in areas where the subject matter of the subsection was complicated or highly technical.

2.45 Second, this phenomenon was not particularly present with respect to the FEIS (which, we believe, was largely prepared by a contractor to the Staff), a fact which, when coupled with the fact that a significant number of the subsections of the FSER that were comprehensive had been prepared by contractors to the Staff, leads us to observe that in a material number of instances the Agency’s internal work product did not rise to the level

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<sup>127</sup> Aug. 17 Board Order at 7.

<sup>128</sup> See Staff Response to Part III of the Board’s Order of August 17, 2006 Supplementation of the FSER” (Sept. 14, 2006).

produced by contractors, and, might not have risen to a desirable level at all without our probing and prodding. This is not to say that we have found that the Staff did not do its job - just that in a significant number of instances the FSER and FEIS did not demonstrate on their face that they had.

2.46 Third, until a number of months into this review, the Staff fought our requests for information at every turn. This was counterproductive, led to material delays, and shifted workload for the Staff, the Applicant, and the Board toward the end of the proceeding. Our initial Order, issued after review of the DSER, had requested that the Staff expressly lay out the facts and logic of its decisions; had the Staff done so, even in the FSER (which was issued before the Commission ruled on the Staff's appeals, and which we began reviewing immediately upon issuance), the entire process would have been much easier and probably would have required less Staff, Applicant, and Board effort.

2.47 Finally, as this review is an inquisitorial function performed by the Board on behalf of the Agency in fulfillment of the Agency's obligation under the AEA to conduct a "mandatory hearing," future parties to mandatory hearings would undoubtedly benefit from Commission instructions to the Staff that the Board indeed stands in the shoes of the Commission reviewing the Staff work product, and the Staff should treat Board requests accordingly.

### III. CONCLUSION

The Board has, in fulfilling its mandatory hearing obligations discussed above, reviewed material portions of the record in this proceeding, and required the Staff and the Applicant to provide additional testimony and documentary evidence with respect to certain areas for which review indicated to the Board that information in the record was insufficient to enable the requisite determinations. In our rulings, we have relied upon and assumed, without independent investigation, the accuracy, veracity, and thoroughness of (1) the content of the Staff documents, including the FEIS and the FSER, and those of the Applicant as placed into the record of this proceeding; and (2) the Staff and Applicant responses to the Board's inquiries and their testimony at the oral portion of this mandatory hearing. We have also assumed and relied upon, pursuant to Commission rulings, the completeness of the Staff's NEPA-related examination of the matters related to the Application, including its consideration of alternatives. Subject to the foregoing, and the Permit Conditions as modified by this Board, supra Part II.C.4, COL Action Items, and those items listed in the record as requiring further action or follow-up at the COL stage (none of which shall be treated as resolved for the purposes of 10 C.F.R. § 52.39(a)(2)), we have reached the following determinations:

A. With respect to safety issues, the Board has determined that the application and the record of this proceeding, as supplemented by the information provided to the Board during the course of its review, contain sufficient information, and that the review of the application by the Staff has been adequate to support findings by the NRC Staff and the Director of NRR in accordance with the Commission's December 2003 Notice of Hearing, see also 10 C.F.R. § 2.104(b), that (1) the issuance of the ESP will not be inimical to the common defense and security or to the health and safety of the public;

and (2) taking into consideration the site criteria contained in 10 C.F.R. Part 100, a reactor, or reactors, having characteristics that fall within parameters for the site, can be constructed and operated without undue risk to the health and safety of the public.

B. With respect to environmental issues, the Board has determined that the review conducted by the Staff pursuant to NEPA and the Commission's implementing regulations in 10 C.F.R. Part 51 has been adequate, in accordance with the Commission's December 2003 Notice of Hearing, see also 10 C.F.R. § 2.104(b)(2)(ii). In addition, the Board finds that (1) the requirements of Sections 102(2)(A), (C), and (E) of NEPA and Subpart A of 10 C.F.R. Part 51 have been complied with in this proceeding; (2) having conducted its own independent balancing of the conflicting environmental and other factors, but excluding examination of the costs and benefits of the proposed facility, the overall balance supports issuance of the license; and (3) after considering reasonable alternatives,<sup>129</sup> protection of the environment does not require

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<sup>129</sup> As previously discussed, the Board did not consider those alternatives that the Commission has directed the Board to postpone until the COL application stage, including design alternatives.

denial or conditioning of the license except to the extent proposed by the Staff in the FSER and the FEIS. Therefore, the Board concludes that these factors support issuance of the requested license.

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For the foregoing reasons, it is this twenty-eighth day of December 2006, ORDERED, that the Director of Nuclear Reactor Regulation is authorized to issue Exelon Generation Company, LLC, an early site permit for the Clinton ESP site for a duration of (20) years, consistent with the Atomic Energy Act of 1954, Commission regulations, and this Initial Decision.

Pursuant to 10 C.F.R. § 2.1210 of the Commission's Rules of Practice, this initial decision will constitute the final decision of the Commission forty (40) days from the date of its issuance, or on February 6, 2007, unless a petition for review is filed in accordance with 10 C.F.R. §§ 2.341, 2.1212, or the Commission directs otherwise. This initial decision shall not become effective until the Commission actions specified in Section 2.340(f)(2) have taken place.

Within fifteen (15) days after service of this initial decision, the Staff or the Applicant may file a petition for review with the Commission on the grounds specified in 10 C.F.R. § 2.341(b)(4). The filing of a petition for review is mandatory in order for a party to have exhausted its administrative remedies before seeking judicial review. Within ten (10) days after service of a petition for review, a party may file an answer supporting or opposing Commission review. The petition for review and any answers shall conform to the requirements of 10 C.F.R. § 2.341(b)(2)-(3).

THE ATOMIC SAFETY  
AND LICENSING BOARD<sup>130</sup>

[Original signed by E. Roy Hawkens for:]

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Paul B. Abramson  
ADMINISTRATIVE JUDGE

[Original signed by:]

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Anthony J. Baratta  
ADMINISTRATIVE JUDGE

[Original signed by E. Roy Hawkens for:]

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David L. Hetrick  
ADMINISTRATIVE JUDGE

Rockville, Maryland  
December 28, 2006

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<sup>130</sup> Copies of this initial decision were sent this date by Internet e-mail transmission to counsel for Applicant and the Staff.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
EXELON GENERATION COMPANY, LLC ) Docket No. 52-007-ESP  
 )  
 )  
(Early Site Permit for Clinton ESP Site) )

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB INITIAL DECISION (UNCONTESTED ISSUES) (LBP-06-28) have been served upon the following persons by deposit in the U.S. mail, first class, or through NRC internal distribution.

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LB INITIAL DECISION (UNCONTESTED ISSUES) (LBP-06-28)

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Office of the Secretary of the Commission

Dated at Rockville, Maryland,  
this 28<sup>th</sup> day of December 2006